Vol. 1020 Number 2

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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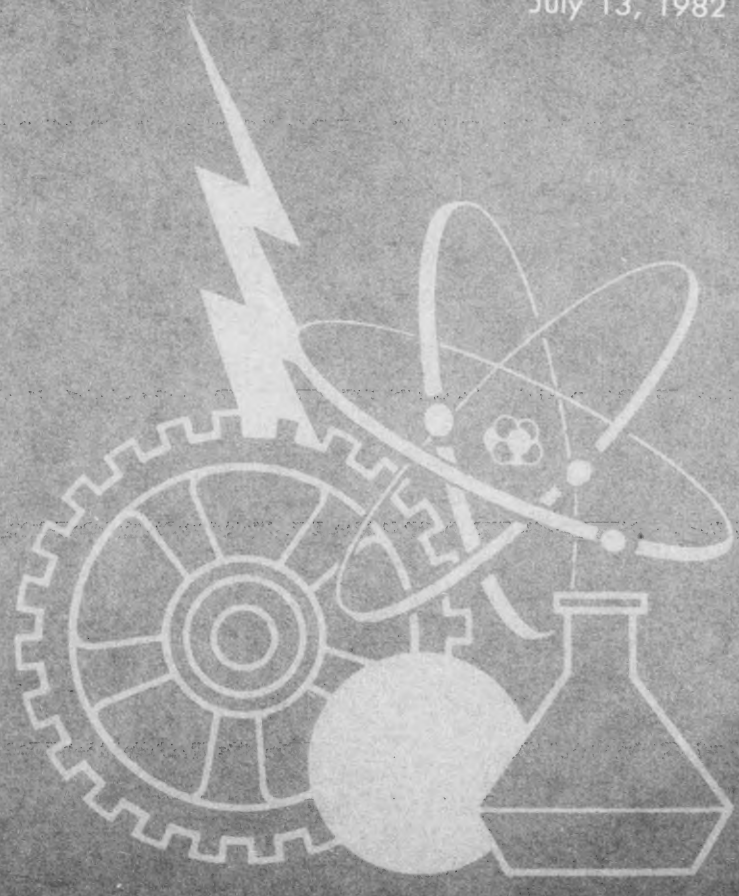
PATENTS

July 13, 1982



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OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 13, 1982 Volume 1020 Number 2

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries and the most recent PCT rule changes see the notices appearing in the Official Gazette at 1001 O.G. 14 on Dec. 9, 1980 and at 1012 O.G. 20 on Nov. 17, 1981.

Note that the international fees have been increased as of Jan. 1, 1982. The current schedule of fees is as follows:

Transmittal fee	$ 35.00
Search fee	300.00
International Fees	
Basic Fee (first 30 pages)	270.00
Basic Supplemental Fee (for each sheet over 30)	6.00
Designation Fees	65.00

GERALD J. MOSSINGHOFF,
Jan. 19, 1982. *Commissioner of Patents and Trademarks.*

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,076,695, Re. S.N. 377,508, Filed May 12, 1982, Cl. 528/48, SILICONE CONTAINING REACTION INJECTION MOLDED POLYURETHANES, Joseph W. Keil, Owner of Record: *Dow Corning Corp., Midland, Mich.,* Attorney or Agent: Jack E. Moermond, et al., Ex. Gp.: 143

4,185,376, Re. S.N. 377,319, Filed May 12, 1982, Cl. 29/568, UNMANNED MACHINING CENTER WITH TOOL CHECKING, Richard Johnstone, Owner of Record: *Kearney & Trecker Corp., West Allis, Wis.,* Attorney or Agent: Cyril M. Hajewski, et al., Ex. Gp.: 324

4,241,618, Re. S.N. 371,391, Filed Apr. 23, 1982, Cl. 74/863, VARIABLE PULLEY TRANSMISSION, Richard L. Smirl, Owner of Record: *Borg-Warner Corp., Chicago, Ill.,* Attorney or Agent: Richard L. Zieg, Ex. Gp.: 352

4,294,882, Re. S.N. 377,190, Filed May 11, 1982, Cl. 428/349, HEAT-SEALABLE ANTISTATIC POLYPROPYLENE FILMS, William J. Andrews, et al., Owner of Record: *British Cellophane Ltd., Somerset, England,* Attorney or Agent: Walter D. Ames, et al., Ex. Gp.: 164

4,310,656, Re. S.N. 353,686, Filed Mar. 1, 1982, Cl. 528/200, POLYCARBONATE TRANSESTERIFICATION, Daniel J. Brunelle, Owner of Record: *General Electric Co., Schenectady, N.Y.,* Attorney or Agent: Peter A. Bielinski, et al., Ex. Gp.: 144

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b).

4,116,358, Reexam. No. 90/000,214, Requested: June 7, 1982, Cl. 220/222, WEATHER AND VAPOR SEAL FOR STORAGE TANK, John S. Kinghorn, et al., Owner of Record: *Requester,* Attorney or Agent: Albert B. Kimball, Jr., et al., Ex. Gp.: 241, Requester: Graver Tank & Mfg., Co., Inc. Houston, Tex.

4,194,225, Reexam. No. 90/000,216, Requested: June 9, 1982, Cl. 360/98, HOUSING FOR DISK UNIT, Alfred Hasler, Owner of Record: *Requester,* Attorney or Agent: Townsend & Townsend, Ex. Gp.: 235, Requester: International Memories, Inc., c/o John L. McGannon, San Francisco, Calif.

Discontinuation of Drawing Comparison Fee

The Patent and Trademark Office no longer requires a $10 (ten dollar) comparison fee payment with the submission of formal sheets of drawings to replace originally filed informal drawings. Accordingly, no fee should be submitted, and all existing requirements for a drawing comparison fee are hereby rescinded.

THERESA A. BRELSFORD,
June 9, 1982. *Acting Assistant Commissioner for Adminstration.*

Trademark Suits

Notices under 15 U.S.C. 1116;
Trademark Act of July 5, 1946.

Reg. No. 53,237 (VALVOLINE), Ashland Oil, Inc.; **Reg. No. 56,816** (VALVOLINE AND DESIGN), **same; Reg. No. 436,821** (VALVOLINE), **same; Reg. No. 700,385** (V VALVOLINE), **same; Reg. No. 739,915** (VALVOLINE), **same; Reg. No. 841,113** (V VALVOLINE IN A CIRCLE), **same; Reg. No. 867,342** (V), **same, filed** Mar. 29, 1982, D.C.N.J. (Newark), Doc. 82-976, *Ashland Oil, Inc.* v. *Taray International Corp.*

Reg. No. 56,816. (See **Reg. No. 53,237.**)

Reg. No. 75,365 (ALLIGATOR BRAND AND DESIGN), Lacoste Alligator S.A.; **Reg. No. 655,860** (IZOD), General Mills, Inc.; **Reg. No. 867,953** (ALLIGATOR DESIGN), Lacoste Alligator S.A.; **Reg. No. 879,171** (LACOSTE), Lacoste Alligator S.A.; **Reg. No. 976,866** (IZOD AND DESIGN), General Mills, Inc.; **Reg. No. 982,012** (LACOSTE), Lacoste Alligator S.A.; **Reg. No. 999,032** (IZOD), General Mills, Inc.; **Reg. No. 1,084,409** (DESIGN MISCELLANEOUS), Lacoste Alligator S.A.; **Reg. No. 1,101,539** (ALLIGATOR DESIGN), Lacoste Alligator S.A.; **Reg. No. 1,108,987** (DESIGN MISCELLANEOUS), Lacoste Alligator S.A.; **Reg. No. 1,108,988** (ALLIGATOR DESIGN), Lacoste Alligator S.A., **filed** Feb. 13, 1981, D.C., N.D. Miss. (Clarksdale), Doc. DC81-26-WK-P, *Lacoste Alligator S.A. and General Mills, Inc.* v. *Jan Johnson, et al.*

Reg. No. 266,929 (A & W ICE COLD ROOT BEER AND DESIGN), A & W Restaurants, Inc.; **Reg. No. 871,882** (DESIGN MISCELLANEOUS), **same; Reg. No. 871,883** (DESIGN MISCELLANEOUS), **same; Reg. No. 871,884** (DESIGN MISCELLANEOUS), **same; Reg. No. 871,885** (DESIGN MISCELLANEOUS), **same; Reg. No. 872,290** (THE BURGER FAMILY AND DESIGN), **same; Reg. No. 909,605** (A & W AND DESIGN), **same, filed** Apr. 12, 1982, D.C. Minn. (Marshall), Doc. CV82661, *A & W Restaurants, Inc.* v. *Charles D. DeVetter, et al.*

Reg. No. 317,704 (METAMUCIL), G. D. Searle & Co., **filed** May 19, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 3110, *G. D. Searle & Co., et al* v. *Contract Pharmacal Corp.* **Same, filed** May 26, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-1443, *G. D. Searle & Co., et al* v. *Giant Food, Inc.* **Same, filed** May 26, 1982, D.C. District of Columbia (Wash. D.C.), Doc. 82-1444, *G. D. Searle & Co., et al* v. *Dart Drug Corp., et al.*

Reg. No. 411,239 (CARTIER), Cartier, Inc.; **Reg. No. 411,240, same; Reg. No. 411,975, same; Reg. No. 759,201 same; Reg. No. 925,672** (C DESIGN), **same; Reg. No. 1,071,823** (INTERLOCKING C DESIGN), **same, filed** Feb. 18, 1981, D.C., S.D.N.Y., Doc. 81-Civ-0980, *Cartier, Inc.* v. *Albert Eida.* Defendant is permanently enjoined and restrained from further infringing plaintiff's trademarks. Filed May 4, 1982.

Reg. No. 411,240. (See Reg. No. 411,239.)

Reg. No. 411,975 (CARTIER), Cartier, Inc.; **Reg. No. 925,672** (C DESIGN), **same; Reg. No. 1,071,823** (INTERLOCKING C DESIGN), **same, filed** Mar. 29, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1977 MEL, *Cartier, Inc., et al* v. *Luis Mejia, doing business as Lama Jewelry & Myriam's Manufacturer.*

Reg. No. 411,975. (See Reg. No. 411,239.)

Reg. No. 429,070 (VITA-SOY), Hong Kong Soya Bean Products Co., Ltd., **filed** May 14, 1982, D.C., S.D.N.Y., Doc. 82-Civ-3164 LBS, *The Hong Kong Soya Bean Products Co., Inc.* v. *International Oriental Food Corp., et al.*

Reg. No. 436,821. (See Reg. No. 53,237.)

Reg. No. 437,715 (SNAP-A-RAY), Bell L. Greene, **filed** May 13, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 3000, *Bell L. Greene* v. *Rinn Corp.*

Reg. No. 509,839 (ROBBINS & MYERS), Robbins & Myers; **Reg. No. 786,814** (HUNTER), **same, filed** Apr. 12, 1982, D.C., N.D. Miss. (Clarksdale), Doc. DC81-61-LS-O, *Robbins & Myers, Inc.* v. *William A. Byford.*

Reg. No. 530,305 (ESTEE LAUDER), Estee Lauder, Inc.; **Reg. No. 949,998** (YOUTH-DEW), **same; Reg. No. 950,482** (ESTEE LAUDER), **same; Reg. No. 1,119,604** (ESTEE LAUDER), **same, filed** Jan. 12, 1982, D.C.N.J. (Newark), Doc. 82-74, *Estee Lauder* v. *Sy Cosmetics, Inc.* Consent judgment for permanent injunction and dismissal of complaint for plaintiffs filed May 7, 1982.

Reg. No. 587,025 (AMANA), Amana Refrigeration, Inc.; **Reg. No. 605,819, same; Reg. No. 715,075, same; Reg. No. 889,068, same, filed** Feb. 22, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 1065, *Amana Refrigeration, Inc.* v. *Spiegel, Inc.* **Same, filed** Dec. 29, 1981, D.C. Neb. (Lincoln), Doc. CV81-L-378, *Amana Refrigeration, Inc.* v. *Ted Rookstool, et al.* Defendants are permanently enjoined from using the mark and name "AMANA" or any imitation on or in connection with the sale, offering for sale, etc, of major appliances, including microwave ovens, or related products. Filed Apr. 27, 1982.

Reg. No. 605,819. (See Reg. No. 587,025.)

Reg. No. 635,072 (CONTINENTAL), Conoco Inc.; **Reg. No. 659,201, same; Reg. No. 1,088,479, same, filed** Sept. 9, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. 81-1216, *Conoco, Inc.* v. *Continental Resources Corp.* Clerk administratively terminated this action without prejudice on Apr. 28, 1982.

Reg. No. 635,072 (CONTINENTAL), Conoco, Inc., **filed** May 29, 1981, D.C., W.D. Okla. (Oklahoma City), Doc. CIV81-715-W, *Conoco, Inc.* v. *Continental Drilling Co., Inc.* Clerk administratively terminated this action on Apr. 28, 1982.

Reg. No. 655,860. (See Reg. No. 75,365.)

Reg. No. 657,756 (DESIGN OF CROWN), Montres Rolex S.A., **filed** Apr. 23, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82-1992 CHH, *Rolex Watch U.S.A., Inc.* v. *Eli Ivazov, doing business as ELI.* **Same, filed** May 3, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-1230, *Rolex Watch U.S.A., Inc.* v. *Bobbie Tallent.* **Same, filed** May 3, 1982, D.C., S.D. Tex. (Houston), Doc. H-82-1231, *Rolex Watch, U.S.A., Inc.* v. *Ronald Branham.*

Reg. No. 659,201. (See Reg. No. 635,072.)

Reg. No. 660,183 (NABISCO & DESIGN), Nabisco, Inc.; **Reg. No. 736,498** (TRIANGLE DESIGN), **same; Reg. No. 922,467** (DESIGN MISCELLANEOUS), **same; Reg. No. 974,656** (TRIANGLE WITH SLANT DESIGN, **same; Reg. No. 1,112,407** (DESIGN MISCELLANEOUS), **same, filed** May 19, 1982 D.C., C.D. Calif. (Los Angeles), Doc. 82 2453, *Nabisco, Inc.* v. *Grand Imperial, Inc., et al.*

Reg. No. 700,385. (See Reg. No. 53,237.)

Reg. No. 704,772 (SERVICEMASTER & DESIGN), Servicemaster Industries, Inc.; **Reg. No. 766,885** (MR. SERVICEMASTER), **same; Reg. No. 782,584** (SERVICEMASTER), **same; Reg. No. 794,943** (DESIGN BUST OF MAN), **same; Reg. No. 810,884** (DESIGN PENNANT), **same; Reg. No. 871,509** (SERVICEMASTER AND DESIGN), **same; Reg. No. 887,665** (SERVICEMASTER AND DESIGN), **same, filed** May 5, 1982, D.C., E.D. Mo. (St. Louis), Doc. 82-695C(4), *Servicemaster Industries, Inc.* v. *James R. Alexander, et al.*

Reg. No. 709,460 (FOUR WINDS), Four Winds Travel, Inc. (N.Y.), **filed** Mar. 30, 1982, D.C., S.D.N.Y., Doc. 82-Civ-1992 CLB, *Four Winds Travel (N.Y.),* v. *Four Winds Travel (Mo.).* Plaintiff is the owner of Reg. No. 709,460. Defendant is permanently enjoined and restrained from infringing plaintiff's trademark. Filed May 18, 1982.

Reg. No. 715,075. (See Reg. No. 587,025.)

Reg. No. 736,498. (See Reg. No. 660,183.)

Reg. No. 739,915. (See Reg. No. 53,237.)

Reg. No. 740,887 (SAGINAW), Saginaw Machine and Tool Co., **filed** Aug. 21, 1981, D.C., E.D. Mich. (Bay City), Doc. 81-10157, *The Wickes Corp., doing business as Saginaw Machine* v. *Saginaw Automation & Machine, Inc.* Court administratively closes this matter pending termination of related bankruptcy proceedings. Filed May 18, 1982.

Reg. No. 759,201. (See Reg. No. 411,239.)

Reg. No. 766,885. (See Reg. No. 704,772.)

Reg. No. 775,231 (TEXACO AND DESIGN), Texaco, Inc.; **Reg. No. 814,388, same; Reg. No. 817,162, same; Reg. No. 835,841, same; Reg. No. 846,249, same; Reg. No. 867,112, same; Reg. No. 883,163, same; Reg. No. 921,776, same; Reg. No. 922,392, same; Reg. No. 922,526, same; Reg. No. 923,115, same; Reg. No. 926,387, same; Reg. No. 926,389, same; Reg. No. 926,628, same; Reg. No. 946,583, same; Reg. No. 1,071,054, same; Reg. No. 1,074,482, same; Reg. No. 1,082,404, same; Reg. No. 1,097,547, same; Reg. No. 1,180,780** (MISCELLANEOUS DESIGN), **same, filed** May 14, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 3033, *Texaco, Inc.* v. *Pep Petroleum Co., et al.*

Reg. No. 782,584. (See Reg. No. 704,772.)

Reg. No. 786,814. (See Reg. No. 509,839.)

Reg. No. 794,943. (See Reg. No. 704,772.)

Reg. No. 810,884. (See Reg. No. 704,772.)

Reg. No. 814,388. (See Reg. No. 775,231.)

Reg. No. 817,162. (See Reg. No. 775,231.)

Reg. No. 835,841. (See Reg. No. 775,231.)

Reg. No. 841,113. (See Reg. No. 53,237.)

Reg. No. 846,249. (See Reg. No. 775,231.)

Reg. No. 867,112. (See Reg. No. 775,231.)

Reg. No. 867,342. (See Reg. No. 53,237.)

Reg. No. 867,953. (See Reg. No. 75,365.)

Reg. No. 871,509. (See Reg. No. 704,772.)

Reg. No. 871,882. (See Reg. No. 266,929.)

Reg. No. 871,883. (See Reg. No. 266,929.)

Reg. No. 871,884. (See Reg. No. 266,929.)

Reg. No. 871,885. (See Reg. No. 266,929.)

Reg. No. 872,290. (See Reg. No. 266,929.)

Reg. No. 877,221 (MISS WORLD), Mecca Ltd., **filed** May 24, 1978, D.C., S.D.N.Y., Doc. 78-Civ-2401LPG, *Alfred Patricelli, doing business as Miss World-U.S.A. Beauty Pageant* v. *B.B.S. Productions, Inc.*

Reg. No. 879,171. (See Reg. No. 75,365.)

Reg. No. 883,163. (See Reg. No. 775,231.)

Reg. No. 887,665. (See Reg. No. 704,772.)

Reg. No. 889,068. (See Reg. No. 587,025.)

Reg. No. 909,605. (See Reg. No. 266,929.)

Reg. No. 911,367 (TACO VILLA AND DESIGN), Taco Villa, Inc., **filed** Nov. 27, 1981, D.C., N.D. Tex. (Dallas), Doc. CA3-81-2095-R, *Taco Villa, Inc.* v. *John Buende, doing business as Taco Villa.* Defendant is permanently enjoined from further infringing Plaintiff's trademark. Filed May 18, 1982.

Reg. No. 916,485 (SIR SPEEDY), Sir Speedy, Inc.; **Reg. No. 947,389** (DESIGN MISCELLANEOUS), **same, filed** Aug. 3, 1979, D.C., N.D. Ill. (Chicago), Doc. 79 C 3209, *Sir Speedy, Inc.* v. *Herbert Rothenberg.* Pursuant to stipulation of the parties, action dismissed with prejudice and without costs on May 3, 1982.

Reg. No. 917,866 (MR. TRANSMISSION), Mr. Transmission, Inc., **filed** May 6, 1982, D.C.S.C. (Columbia), Doc. 82-893-6, *Mr. Transmission, Inc.* v. *Paul P. Keener, et al.*

Reg. No. 921,776. (See Reg. No. 775,231.)

Reg. No. 922,392. (See Reg. No. 775,231.)

Reg. No. 922,467. (See Reg. No. 660,183.)

Reg. No. 922,526. (See Reg. No. 775,231.)

Reg. No. 923,115. (See Reg. No. 775,231.)

Reg. No. 925,672. (See Reg. Nos. 411,239 and 411,975.)

Reg. No. 926,387. (See Reg. No. 775,231.)

Reg. No. 926,389. (See Reg. No. 775,231.)

Reg. No. 926,628. (See Reg. No. 775,231.)

Reg. No. 946,583. (See Reg. No. 775,231.)

Reg. No. 947,389. (See Reg. No. 916,485.)

Reg. No. 949,998. (See Reg. No. 530,305.)

Reg. No. 950,482. (See Reg. No. 530,305.)

Reg. No. 953,743 (AZTECA AND DESIGN), Azteca Corn Products Corp.; **Reg. No. 956,581** (AZTECA), **same, filed** May 14, 1982, D.C., N.D. Ill. (Chicago), Doc. 82C2991, *Azteca Corn Products Corp.* v. *Azteca Milling Co.*

Reg. No. 956,349 (ALCAN), Alcan Aluminum Corp.; **Reg. No. 966,835** (ALCAN AND DESIGN), **same; Reg. No. 984,768** (ALCAN AND DESIGN), **same; Reg. No. 1,004,688** (ALCAN), **same; Reg. No. 1,187,352** (ALCAN), **same, filed** Mar. 31, 1982, D.C.N.J. (Camden), Doc. 82-1012, *Alcan Aluminum Corp.* v. *Arbard Short, et al.*

Reg. No. 956,581. (See Reg. No. 953,743.)

Reg. No. 966,835. (See Reg. No. 956,349.)

Reg. No. 972,082 (TARGET DESIGN), Dayton-Hudson Corp., **filed** Aug. 17, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-1929, *Dayton-Hudson Corp.* v. *Dart Drug Corp., et al.* Order dismissing complaint filed Mar. 26, 1982. **Same, filed** Oct. 19, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-2535, *Dayton-Hudson Corp.* v. *Dart Drug Corp., et al.* Order dismissing complaint filed Mar. 26, 1982. **Same, filed** Oct. 27, 1981, D.C. District of Columbia (Wash. D.C.), Doc. 81-2605, *Dayton-Hudson Corp.* v. *Dart Drug Corp., et al.* Order dismissing complaint filed Mar. 26, 1982.

Reg. No. 974,656. (See Reg. No. 660,183.)

Reg. No. 976,866. (See Reg. No. 75,365.)

Reg. No. 978,212 (ULTRASUEDE), Springs Mills, Inc., **filed** Feb. 25, 1982, D.C., S.D.N.Y., Doc. 82-7085, *Springs Mills, Inc.* v. *Ultracashmere House, Ltd., et al.* **Same, filed** Oct. 20, 1981, D.C. Md. (Baltimore), Doc. JH-81-2702, *Springs Mills, Inc.* v. *Kavanaugh's of Maryland, Inc.* Defendant is permanently enjoined and restrained from further infringing Plaintiff's trademark. Filed Apr. 27, 1982.

Reg. No. 982,012. (See Reg. No. 75,365.)

Reg. No. 984,768. (See Reg. No. 956,349.)

Reg. No. 999,032. (See Reg. No. 75,365.)

Reg. No. 999,849 (ORGAN GRINDER), Organ Grinder, Inc.; **Reg. No. 999,850** (ORGAN GRINDER AND DESIGN), **same, filed** Sept. 28, 1981, D.C., W.D. Pa. (Pittsburgh), Doc. 81-1655, *Organ Grinder, Inc.* v. *Barbara L. Reilly, et al.* Defendants are hereby enjoined from use of the name or mark ORGAN GRINDER in any form or combination. Filed May 20, 1982.

Reg. No. 999,849 (ORGAN GRINDER), Organ Grinder, Inc., **filed** May 6, 1977, D.C. Wis. (Milwaukee), Doc. 77-275, *Organ Grinder, Inc.* v. *James C. Bringe, doing business as Organ Grinder Pizza.* Consent judgment filed June 2, 1977.

Reg. No. 999,850. (See Reg. No. 999,849.)

Reg. No. 1,000,819 (CASA BONITA AND DESIGN), Casa Bonita, Inc.; **Reg. No. 1,078,642** (CASA BONITA), **same, filed** May 4, 1982, D.C., S.D. Calif. (San Diego), Doc. 82-0541-T(M), *Frank D. Gilliam* v. *Ramon Galvan, doing business as Casa Bonita.*

Reg. No. 1,001,671 (MARIANO'S AND DESIGN), Mariano's Restaurants, Inc., **filed** May 5, 1982, D.C., N.D. Tex. (Dallas), Doc. CA3-82-0699-F, *Mariano's Restaurants, Inc.* v. *Jus-Made, Inc., et al.*

Reg. No. 1,004,688. (See Reg. No. 956,349.)

Reg. No. 1,017,132 (SUN LINE), Marriott Corp., **filed** Apr. 22, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2590 (LPG), *Sun Line Cruises* v. *Sun World Lines, Ltd.*

Reg. No. 1,045,985 (OP AND DESIGN), Ocean Pacific Sunwear, Inc., **filed** Sept. 21, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81 4917, *Ocean Pacific Sunwear, Inc.* v. *Tony Kaufman, et al.*

Reg. No. 1,045,985 (OP AND DESIGN), Ocean Pacific Sunwear, Inc.; **Reg. No. 1,050,102** (OCEAN PACIFIC), **same, filed** July 10, 1981, D.C., C.D. Calif. (Los Angeles), Doc. 81-3438-LEW, *Ocean Pacific Sunwear, Inc.* v. *Richard Jensen, et al.* Final Consent and Order re permanent injunction restraining Defendants from printing, selling, etc. materials with stylized "OP" or OCEAN PACIFIC filed May 10, 1982.

Reg. No. 1,050,102. (See Reg. No. 1,045,985.)

Reg. No. 1,071,054. (See Reg. No. 775,231.)

Reg. No. 1,071,823. (See Reg. Nos. 411,239 and 411,975.)

Reg. No. 1,074,482. (See Reg. No. 775,231.)

Reg. No. 1,078,642. (See Reg. No. 1,000,819.)

Reg. No. 1,082,145 (OPIUM), Charles of the Ritz Group, Ltd.; **Reg. No. 1,148,503** (MISCELLANEOUS DESIGN), **same, filed** Apr. 9, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2259 LBS, *Charles of the Ritz Group, Ltd., et al* v. *Jon Paul Perfumers Ltd., et al.*

Reg. No. 1,082,404. (See Reg. No. 775,231.)

Reg. No. 1,084,409. (See Reg. No. 75,365.)

Reg. No. 1,085,017 (TMC), Advo-System, Inc., **filed** Apr. 1, 1982, D.C., N.D. Ga. (Atlanta), Doc. C82-668A, *Advo-System, Inc.* v. *Front Door Dispatch, Inc. of Kentucky.*

Reg. No. 1,086,395 (BOTTEGA VENETA), Bottega Veneta, Inc., **filed** Mar. 23, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1414 WMB, *Bottega Veneta, Inc.* v. *RHM Marketing Co., Inc., et al.*

Reg. No. 1,088,479. (See Reg. No. 635,072.)

Reg. No. 1,089,458 (PIZZERIA UNO), Pizzeria Uno, Inc., **filed** May 21, 1982, D.C.S.C. (Columbia), Doc. 82-1218-15, *Pizzeria Uno Corp.* v. *James W. Temple, Jr., doing business as Taco Uno.*

Reg. No. 1,089,893 (THE SKYLINERS AND DESIGN), Rock and Beaumont, **filed** May 6, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2911 HFW, *Joseph V. Rock and James L. Beaumont* v. *Drew Cummings, doing business as Drew Cummings Production, et al.*

Reg. No. 1,097,547. (See Reg. No. 775,231.)

Reg. No. 1,101,539. (See Reg. No. 75,365.)

Reg. No. 1,108,987. (See Reg. No. 75,365.)

Reg. No. 1,108,988. (See Reg. No. 75,365.)

Reg. No. 1,112,407. (See Reg. No. 660,183.)

Reg. No. 1,112,416 (CHIPWICH), Richard E. La Motta, **filed** May 13, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 2339, *Chipwich, Inc. and Richard E. La Motta* v. *John C. Marsh, Jr., et al.*

Reg. No. 1,115,250 (T SHIRTS AND DESIGN), T-Shirts Plus, Inc., **filed** Apr. 30, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1873, *T Shirts Plus* v. *T-Shirts Plus, Inc.*

Reg. No. 1,118,190 (CAMP BEVERLY HILLS AND DESIGN), Camp Beverly Hills, Inc., **filed** May 4, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2838 (JMC), *Camp Beverly Hills, Inc.* v. *Camp Central Park, et al.*

Reg. No. 1,119,604. (See Reg. No. 530,305.)

Reg. No. 1,129,368 (VEGIBLE AND DESIGN), Jewell Lain, **filed** May 7, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 2262 WPG, *Jewell Lain* v. *Ron Cannon, et al.*

Reg. No. 1,136,435 (DALLAS COWBOYS CHEERLEADERS UNIFORM DESIGN), Dallas Cowboys Cheerleaders, Inc., **filed** Apr. 30, 1982, D.C., N.D. Tex. (Dallas), Doc. 3-82-0672-D, *Dallas Cowboys Cheerleaders, Inc.* v. *Kasey Roberts, doing business as Kasey Roberts Incognito.*

Reg. No. 1,145,365 (TOGETHER AND DESIGN), Together Dating Service, Inc., **filed** Apr. 5, 1982, D.C., N.D. Ohio (Toledo), Doc. 82-211, *Together Development Corp.* v. *Rudolph Young, et al.*

Reg. No. 1,148,503. (See Reg. No. 1,082,145.)

Reg. No. 1,157,518 (GREEN COUNTRY SALADS AND DESIGN), Green Country Salads, Inc., **filed** Apr. 30, 1982, D.C., N.D. Okla. (Tulsa), Doc. 82-C-511-E, *Green Country Salads, Inc.* v. *J & M Farms, Inc.*

Reg. No. 1,161,160 (BOMBER), Americana Submarine, **filed** Apr. 16, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 2316, *Americana Submarine, Inc.* v. *Andy Lavato, et al, doing business as Piasano's Pizza & Bomber Shop.*

Reg. No. 1,178,248 (GARY FREDERIC), Gary Frederic, Ltd., **filed** May 5, 1982, D.C., S.D.N.Y., Doc. 82-Civ-2864, *Gary Frederic, Ltd.* v. *Gary Sefferman, et al.*

Reg. No. 1,180,592 (THE HOT POTATO AND DESIGN), Fast Food Mgmt., Inc., **filed** Mar. 9, 1982, D.C. Puerto Rico (San Juan), Doc. 82-496, *Fast Food Mgmt., Inc.* v. *Louis H. Dexter.* Judgment granting Defendant's motion to dismiss entered Apr. 30, 1982.

Reg. No. 1,180,780. (See Reg. No. 775,231.)

Reg. No. 1,183,753 (VIN-LOX), Vin-Lox Corp., **filed** Apr. 28, 1982, D.C., S.D. Fla. (Miami), Doc. 82-6263-CIV-SMA, *Vin-Lox Corp.* v. *Bel-Mar Paint Corp.*

Reg. No. 1,184,976 (KEY CARS), Kidco, Inc., **filed** Jan. 20, 1982, D.C., N.D. Ill. (Chicago), Doc. 82 C 319, *Kidco, Inc.* v. *Lectron, Ltd.* Plaintiff's trademark is valid and infringed. Defendant is permanently enjoined and restrained from further infringing plaintiff's trademark. Filed Apr. 20, 1982.

Reg. No. 1,185,553 (ELECTRIC BLUE), Electric Blue, Inc., **filed** Mar. 29, 1982, D.C., C.D. Calif. (Los Angeles), Doc. 82 1540 TJH (Px), *Kenyon Video, Inc.* v. *Novacom Productions, et al.*

Reg. No. 1,186,570 (LIGMAJECT), Ligmaject Produktiongesellschaft fur Medizinische Gerate MBH, **filed** Feb. 11, 1982, D.C., M.D. Fla. (Orlando), Doc. 82-79-Orl-Civ, *Healthco, et al* v. *Command International, Inc.*

Reg. No. 1,187,352. (See Reg. No. 956,349.)

Reg. No. 1,191,820 (INTERGOLD), International Gold Corp. Ltd., **filed** Mar. 10, 1980, D.C., N.D. Tex. (Dallas), Doc. CA3-80-0288-F, *International Gold Corp. Ltd.* v. *Intragold, Inc., et al.*

PATENT NOTICES

Certificates of Correction for the Week of July 13, 1982

D. 263,241	4,304,569	4,316,191	4,323,875
3,745,295	4,304,947	4,316,515	4,323,946
4,021,372	4,305,538	4,317,110	4,324,035
4,042,890	4,305,815	4,317,671	4,324,634
4,143,467	4,306,110	4,317,702	4,324,662
4,154,770	4,306,438	4,318,087	4,324,679
4,223,855	4,306,536	4,318,464	4,324,898
4,225,310	4,306,779	4,318,904	4,325,280
4,226,427	4,307,235	4,319,032	4,325,290
4,227,933	4,307,551	4,319,248	4,325,457
4,229,355	4,307,678	4,319,751	4,325,585
4,230,857	4,308,145	4,320,012	4,325,702
4,233,859	4,308,349	4,320,024	4,325,728
4,240,170	4,308,557	4,320,407	4,326,090
4,240,934	4,309,350	4,320,786	4,326,534
4,263,124	4,309,973	4,321,051	4,326,702
4,264,732	4,310,441	4,321,065	4,326,788
4,267,043	4,310,688	4,321,795	4,326,841
4,270,980	4,310,803	4,321,827	4,327,461
4,272,448	4,311,240	4,321,865	4,327,503
4,273,051	4,311,861	4,322,060	4,327,825
4,275,333	4,311,889	4,322,168	4,327,892
4,280,177	4,312,556	4,322,415	4,328,073
4,284,160	4,312,927	4,322,418	4,328,223
4,284,430	4,313,052	4,322,495	4,328,331
4,285,120	4,313,195	4,322,752	4,328,418
4,287,500	4,313,254	4,322,829	4,328,842
4,291,176	4,313,551	4,322,932	4,328,943
4,291,548	4,313,574	4,323,018	4,329,011
4,292,091	4,313,849	4,323,172	4,329,036
4,293,432	4,314,057	4,323,269	4,329,085
4,293,955	4,314,216	4,323,409	4,329,149
4,295,983	4,315,035	4,323,541	4,329,237
4,299,665	4,315,878	4,323,587	4,330,470
4,303,027	4,316,098	4,323,806	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

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State	*Name of Library*	*Telephone Contact*
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Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
California	Los Angeles Public Library	(213) 626-7555 Ext. 273
	Sacramento: California State Library	(916) 322-4572
	Sunnyvale: Patent Information Clearinghouse*	(408) 738-5580
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware	(302) 738-2238
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2865
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6552
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214, 215
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7814
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 930-0850
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1321**
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 226
South Carolina	Charleston: Medical University of South Carolina	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 528-2957
Texas	Dallas Public Library	(214) 748-9071
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

**Call only between the hours of 10:00 a.m. and 5:00 p.m.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF May 15, 1982

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	6-23-80
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	1-04-80
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-04-81
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	4-09-81
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	2-08-81
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	4-15-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	8-29-80
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-20-80
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	12-07-79
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-26-79
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	6-04-80
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	8-11-80
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—M. M. NEWMAN, Director ... Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	10-02-80
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting, Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	2-13-80
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	1-07-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	6-26-80

Expiration of patents: The patents within the range of numbers indicated below expire during May 1982, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,181,175 to 3,186,003, inclusive

Plant Patents ..... Numbers 2,502 to 2,521 inclusive

REISSUES

JULY 13, 1982

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 30,992

CONTROL UNITS FOR VEHICLE POWERSTEERING MECHANISMS

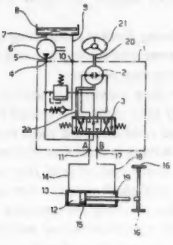
Battista Bertanza, Segrate, Italy, assignor to Riva Calzoni S.p.A., Milan, Italy

Original No. 4,069,743, dated Jan. 24, 1978, Ser. No. 702,678, Jul. 6, 1976. Application for reissue Nov. 9, 1979, Ser. No. 93,036

Claims priority, application Italy, Jul. 11, 1975, 25338 A/75

Int. Cl.[3] **B62D** *5/08;* **F15B** *13/04*

U.S. Cl. 60—384 **7 Claims**



2. A control unit for a vehicle powersteering mechanism comprising:

a housing having an inlet for connection to a source of hydraulic fluid under pressure and an outlet for returning hydraulic fluid to said source;

a double chamber hydraulic servomotor;

a pair of ports in said housing selectively operatively connected to said double chamber hydraulic servomotor and selectively operatively connected to said inlet and outlet;

a hydraulic motor provided with a rotatable element and a follower element being operatively disposed within said housing;

a distributor valve means including a stationary member and one sleeve like displaceable body having an outer wall of a predetermined thickness with an outer surface, a plurality of circumferentially spaced longitudinally extending bores provided within the thickness of the outer wall of said sleeve like displaceable body, a plurality of radially extending passages in said sleeve like displaceable distributor body projecting through a portion of said outer wall to the outer surface thereof, each of said longitudinally extending bores being in communication in said outer wall with at least two longitudinally spaced apart radially extending passages, said rotatable element engaging a portion of said outer surface of said sleeve like displaceable body and enclosing one of said spaced apart radially extending passages;

said distributor valve means being solely angularly displaceable with respect to a neutral position, and being operable on rotation of a control shaft connected thereto to simultaneously divert hydraulic fluid flowing from said inlet through a first series of selective radial passages and longitudinally extending bores to said hydraulic motor and through a second series of selective radial passages and longitudinally extending bores to one of said ports and thus to its associated chamber of said servomotor, hydraulic fluid being exhausted from the other chamber of the servomotor through said other port, said distributor valve means and said outlet;

a mechanical connection formed between said follower element of said hydraulic motor and said sleeve like displaceable body; and

means adapted to limit the displacement of said sleeve like displaceable body with respect to the stationary member of said distributor valve means and with respect to said neutral position.

Re. 30,993

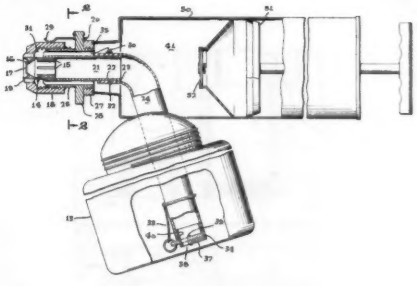
GENERAL PURPOSE COMPRESSION-TYPE SPRAYER

Leo A. Hopp, Canoga Park, Calif., assignor to Column Corporation, Van Nuys, Calif.

Original No. 4,204,645, dated May 27, 1980, Ser. No. 906,467, May 17, 1978. Application for reissue Mar. 30, 1981, Ser. No. 248,722

Int. Cl.[3] **B05B** *7/30*

U.S. Cl. 239—341 **10 Claims**



1. Apparatus for spraying material delivered to a nozzle assembly from a supply tank through a supply passage under impulsion of compressed gas from a source thereof applied to the surface of said material in said tank wherein compressed gas from said source is also mixed with said material, comprising:

a cylinder having at least one aperture therethrough interposed between said gas source and said supply passage just upstream of the final aperture of said nozzle assembly, said cylinder having its outer surface in communication with said gas source and its inner surface in communication with said supply passage and being slidable axially in contact with the end of said supply passage; *and*

positioning means including an adjustment nut connected to said cylinder and to said supply passage, at least one of said connections being by means of threads, associated with said nozzle assembly for moving said cylinder axially of the end of said supply passage and thereby controlling the portion of the aperture in the cylinder which is available for gas flow therethrough and thus variably restricting the flow of compressed gas into said material [and].

[adjustable means interposed between said supply tank and the inlet end of the supply passage for variably restricting the flow of material into said passage.]

Re. 30,994

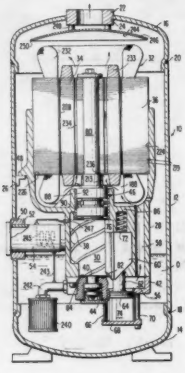
VERTICAL AXIS HERMETIC ROTARY HELICAL SCREW COMPRESSOR WITH IMPROVED ROTARY BEARINGS AND OIL MANAGEMENT

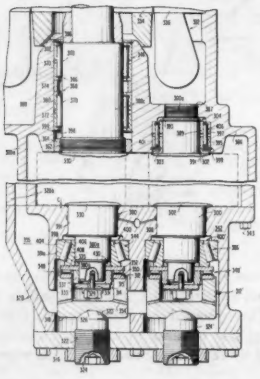
David N. Shaw, Unionville, Conn., assignor to Dunham-Bush, Inc., West Hartford, Conn.

Original No. 4,181,474, dated Jan. 1, 1980, Ser. No. 882,728, Mar. 2, 1978. Application for reissue Feb. 6, 1981, Ser. No. 232,269

Int. Cl.[3] **F01C** *1/16, 21/06*

U.S. Cl. 417—366 **22 Claims**





22. In a rotary helical screw compressor comprising:

a cylindrical casing,

intermeshed helical screw rotors borne by said casing,

shaft means fixed to at least one of said helical screw rotors,

a casing end plate closing off one end of said casing and facing one end of said rotors,

said shaft means projecting through said casing end plate,

a bearing pack assembly carried by said casing end plate for rotatably supporting said shaft means,

the improvement wherein:

said bearing pack assembly comprises a tapered roller bearing pack assembly having first and second oppositely directed tapered roller bearings,

said shaft means comprises first and second reduced diameter portions defining respectively, first and second radial shoulders therebetween,

said casing end plate including a small diameter opening on the side facing said at least one helical screw rotor for receiving said shaft means and an enlarged diameter opening portion on the opposite side as an axial extension thereof,

said first bearing comprising a first angular cup carried within said enlarged diameter opening of said casing end plate with one end of said cup abutting a radial shoulder formed within said casing end plate intermediate of said small and enlarged diameter openings, and

an annular cone press fitted to said first reduced diameter portion of said shaft means,

said second bearing comprising a second annular cone of smaller diameter than that of said first cone and having a radially outer face which is oblique and which faces axially away from said at least one helical screw rotor,

a bearing pack assembly end plate including a bearing cup retainer of cylindrical form fixed thereto and extending axially towards said second bearing, within said enlarged diameter opening of said casing end plate and having its inner periphery stepped to define a bearing cup retainer shoulder,

said second bearing further comprising an annular cup facing said second cone and having one end abutting the shoulder of said bearing cup retainer,

a first annular shim mounted to said second reduced diameter portion of said shaft means and between the other end of said second cone and said shaft means second shoulder,

said first shim having a thickness determined by the distance between the other end of said first cone and said second shoulder on said shaft means when said at least one rotor has its end face abutting the opposing surface of said casing end plate and a predetermined minimal clearance dimension between the end face of said at least one rotor and the opposing surface of said casing end plate when said second cone is axially locked in abutment with said first cone,

means for axially locking said second cone in axial abutment with said first cone and said first shim,

a second shim interposed between said bearing pack assembly end plate and said casing end plate and having a thickness conforming to the desired clearance between the end face of said at least one helical screw rotor and the opposing surface of said casing end plate when said first cup is pressed against the shoulder of said casing end plate, and

means for fixedly mounting said bearing pack assembly end plate against the opposing wall of said casing end plate with said second shim interposed therebetween;

whereby, regardless of whether the compressor is under compressive load or not, said minimal clearance is maintained between the end face of said at least one helical screw rotor and said casing end plate for minimizing loss of compressed working fluid therebetween.

Re. 30,995

HIGH INTEGRITY COCRAL(Y) COATED NICKEL-BASE SUPERALLOYS

John R. Rairden, III, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Original No. 4,101,715, dated Jul. 18, 1978, Ser. No. 804,936, Jun. 9, 1977. Application for reissue Jul. 7, 1980, Ser. No. 166,126

Int. Cl.[3] **B32B** *15/20*

U.S. Cl. 428—680 **2 Claims**

1. A high temperature oxidation and corrosion resistant

coated nickel-base superalloy article [having a thermal expansion coefficient value in inches per inch per °F. measured over a temperature range of

(i) 100°–1200° F. of from 8.45 to 9.05, and

(ii) 100°–1740° F. of from 9.45 to 10.05;] *characterized by high coating-substrate interface integrity, said article* comprising:

(a) a nickel-base superalloy, and

(b) a [first] CoCrAl(Y) coating *providing the outer surface of said article, said coating having a substantially uniform* composition [consisting essentially] *composed* of, on a weight basis, approximately 26–32 percent chromium, 3–9 percent aluminum, and 0–1 percent yttrium, other rare earth elements, platinum or rhodium, and the balance cobalt *and impurities ordinarily associated with the aforementioned constituents*[.], *said nickel-base superalloy and said CoCrAl(Y) coating having substantially matching thermal expansion coefficient values with the maximum difference between the thermal expansion coefficient value of said substrate and the thermal expansion coefficient value of said coating being about 4 percent over a temperature range from 100° F. to 1740° F.*

PLANT PATENTS

GRANTED JULY 13, 1982

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,865

FREESTONE PEACH

David L. Armstrong, Orange, Calif., assignor to Armstrong Nurseries, Inc., Ontario, Calif.

Filed Oct. 10, 1980, Ser. No. 196,024

Int. Cl.[3] A01H *5/00*

U.S. Cl. Plt.—42 **1 Claim**

1. A new and distinct variety of peach of the freestone class, substantially as herein shown and described, and further having, in combination, the following characteristics, namely: a moderately vigorous habit of growth, being a regular and heavy bearer, bearing small non-showy salmon-pink flowers and bearing fruit in mid-August which is somewhat larger than average, white-fleshed and globose, of eating quality from good to best, and having a moderate to abundant supply of rich, sweet juice.

4,866

VARIETY OF GRAPEVINE

Harold P. Olmo, Davis, Calif., and James F. Guymon, deceased, late of Davis, Calif. (by Charlene S. Guymon, executrix), assignors to The Regents of the University of California, Berkeley, Calif.

Filed Sep. 22, 1980, Ser. No. 189,965

Int. Cl.[3] A01H *5/03*

U.S. Cl. Plt.—47 **1 Claim**

1. The new and distinct grapevine herein described and illustrated, and identified by the characteristics enumerated above.

PATENTS

GRANTED JUL. 13, 1982

ERRATA

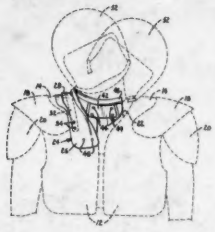
For CLASS	See PATENT NO.
464–111	4,338,796
464–167	4,338,797
464–023	4,338,798
073–863	4,338,841
073–863	4,338,842
148–403	4,339,270
524–255	4,339,275
521–049	4,339,358
524–512	4,339,359
524–028	4,339,360
527–303	4,339,361
524–005	4,339,362
524–034	4,339,363
524–044	4,339,364
523–400	4,339,365
527–100	4,339,366
525–131	4,339,367
523–414	4,339,368
523–414	4,339,369
524–424	4,339,370
524–310	4,339,371
524–169	4,339,372
524–521	4,339,373
524–606	4,339,374
524–602	4,339,375
524–116	4,339,376
548–474	4,339,382
548–419	4,339,383
549–525	4,339,384
548–409	4,339,385
549–496	4,339,386
549–488	4,339,387
549–332	4,339,388
549–555	4,339,389
426–250	4,339,451
523–220	4,339,556
373–052	4,339,624
373–158	4,339,625
336–136	4,339,739
250–490	4,339,826

PATENTS

GRANTED JULY 13, 1982

GENERAL AND MECHANICAL

4,338,685
CERVICAL COLLAR
LaPorta, Jr., Phil, 1111 N. Glenstone, Springfield, Mo. 65802
Filed Jun. 2, 1980, Ser. No. 155,552
Int. Cl.[3] A41D *13/00*
U.S. Cl. 2—2 **10 Claims**



1. A protective collar device for a user wearing a helmet and an athletic shoulder pad harness having a neck opening for receiving the neck, said device comprising:

a pair of spaced apart arch members constructed of a rigid material and adapted for rigid attachment to the harness with inside edge portions of the arch members extending inwardly into the neck opening adjacently above the surface of the harness surrounding the opening; and

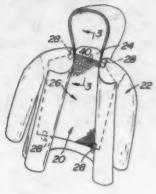
a rigid connecting member rigid with and extending between said arch members with a front edge portion of said connecting member located to project forwardly into the neck opening adjacently above the surface of the harness surrounding the opening,

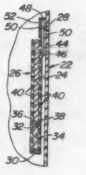
said edge portions of the arch members and connecting member cooperating to reduce the size of the neck opening and to elevate the neck opening to a position wherein the helmet contacts said edge portions of the arch members and connecting member to limit bending of the neck to the sides and to the rear.

4,338,686
GARMENT WITH ABSORBENT PAD
Michael Bell, P. O. Box 400, Warrington, Pa. 18976
Continuation-in-part of Ser. No. 83,726, Oct. 10, 1979, abandoned. This application Oct. 6, 1980, Ser. No. 194,496
Int. Cl.[3] A41D *1/02*
U.S. Cl. 2—93 **11 Claims**

1. For use in a garment adapted to be worn on the torso of a person and formed of a relatively impervious material and having an inner surface, the improvement comprising means for absorbing moisture in air trapped within said garment and releasable securement means for securing said moisture absorbing means within said garment and onto said surface, said moisture absorbing means comprising a pad having an inner and outer surface and formed of a moisture absorbent material, each of said surfaces including a moisture barrier thereon, each of said moisture barriers including plural openings therein exposing portions of said absorbent material to the air trapped within said garment, one of said moisture barriers having a radiant-energy reflective outer surface and the other of said moisture barriers having a radiant energy absorptive outer surface, said releasable securement means enabling either of said barriers to be disposed adjacent the inner surface of said garment when said moisture absorbing means is mounted within said garment.

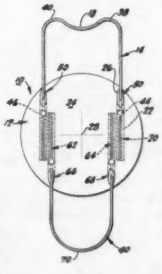
6. An outer covering to be worn on the body of a person, said covering comprising a fabric having an inner and outer surface and formed of a moisture absorbent material, each of said surfaces including a moisture barrier thereon, each of said moisture barriers including plural openings therein exposing portions of said absorbent material to the air trapped between said covering and the body of the person to enable said absorbent material to absorb said moisture while exposing portions





of said absorbent material to the ambient air outside said covering to enable said fabric to breathe, one of said moisture barriers having a radiant energy reflective outer surface and the other of said barriers having a radiant energy absorptive outer surface.

4,338,687
INTRAOCULAR LENS WITH SPRING MECHANISM
Edgar A. Rainin, 20 Shawn Ct., Danville, Calif. 94526
Filed Oct. 14, 1980, Ser. No. 196,281
Int. Cl.[3] A61F *1/16, 1/22*
U.S. Cl. 3—13 **9 Claims**



1. An intraocular lens comprising:

a. a lens portion;

b. an appendage associated with said lens portion and extending away from said lens portion, said appendage including a proximal and a distal end portion;

c. means for coupling said proximal end portion of said appendage with said lens portion with said distal end portion of said appendage extending away from said lens portion;

d. spring means associated with said lens portion for permitting resilient movement of said appendage in relation to said lens portion, said spring means including a cavity

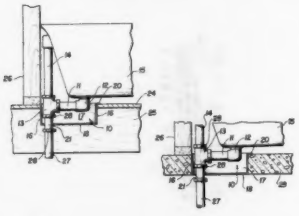
within said lens portion, at least a portion of said cavity including a continuous peripheral wall area extending along the length of said cavity, and a spring being at least partially housed within said lens portion cavity and extending along said continuous peripheral wall area, said spring being adapted for receiving force exerted by said proximal end portion of said appendage.

4,338,688

ENCLOSURE FOR TUB DRAINS

William T. Petty, Rutherford, Tenn., assignor to Elbert L. Petty; Lloyd F. Petty, both of Rutherford and Robert M. Petty, Kenton, all of, Tenn.

Filed Aug. 5, 1980, Ser. No. 175,580
Int. Cl.³ A47K *17/00*; E03C *1/00*
U.S. Cl. 4—191 **1 Claim**



1. A dry enclosure for bath tub drains operable to exclude vermin and odors from entering a bathroom where the tub is situated through a floor opening adjacent to the drain, the dry enclosure comprising a rectangular open top box adapted to fit snugly into a floor opening and having at its top and around three of its sides only a narrow outwardly directed right angular support flange for the enclosure adapted to rest on the bathroom floor immediately surrounding the margin of the floor opening, the wall of said enclosure without said flange adapted to fit snugly against adjacent wall framing, and a tubular nipple anchored in the bottom wall of the box and projecting above and below said bottom wall substantially equidistantly and having its top end terminating within the box well below the open top thereof, the opposite ends of said nipple being threaded and adapted to be threadedly coupled within the box to an element of the tub drain and below the bottom wall of the box to a descending waste pipe.

4,338,689

SELF-ALIGNING VALVE ASSEMBLY

Clifford V. Zieg, Costa Mesa, Calif., assignor to Kaiser Aerospace & Electronics Corporation, Oakland, Calif.

Filed Dec. 5, 1980, Ser. No. 213,478
Int. Cl.³ E03D *1/34*
U.S. Cl. 4—378 **10 Claims**

1. A valve assembly for use inside of an enclosed container comprising:

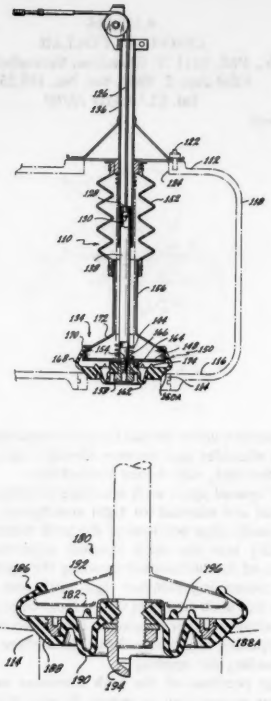
a support structure capable of being mounted on the outside of the container, opposite an annulus defining a drain hole, said drain hole having an inlet side and an outlet side;

coupling means including a pressure plate joining said support structure to sealing means;

sealing means including a circular valve plug centrally attached to said coupling means;

said plug being of elastomeric material and having an integral spherical seating surface and an annular lip member enclosing said pressure plate;

said plug including an annular fold intermediate said seating surface and the plug center, for permitting movement of said seating surface relative to said coupling means;



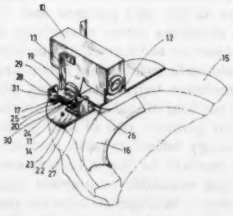
whereby said seating surface can effect a fluid tight seal of the drain hole when said coupling means is not fully aligned with the drain hole.

4,338,690

AUTOMATIC MECHANISM FOR FLUSH AND RAISING TOILET SEAT

Jung H. Hsieh, and Jung K. Hsieh, both of 7, Alley 1, La. 225, Sec. 6, Chung Hsiao E. Rd., Taipei, Taiwan

Filed Dec. 28, 1979, Ser. No. 108,234
Claims priority, application Taiwan, Dec. 1, 1978, 6722913
Int. Cl.³ A47K *13/10*; E03D *5/04*
U.S. Cl. 4—300 **6 Claims**



1. An automatic mechanism for flushing a toilet and controlling the positioning of a toilet seat, comprising:

a toilet seat having end plate means pivoted at the back of a toilet bowl;

an actuating device on the back of said toilet bowl and normally biasing said seat toward a vertical position;

means for controlling movement of said toilet seat including means operable to hold said seat in a near horizontal position and to release said holding means when said seat is occupied by a user and moved downwardly from said near horizontal position so that said seat will be raised to a vertical position by said actuating device after termination of occupancy;

means for automatically flushing said toilet including means operable in response to movement of said seat from a horizontal to a vertical position.

4,338,691

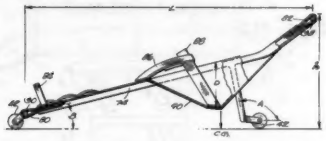
BATHTUB AID FOR HANDICAPPED

Edward J. Gaffney, Highway SS, Pewaukee, Wis. 53072

Filed Dec. 31, 1979, Ser. No. 108,882

Int. Cl.³ A47K *3/12*

U.S. Cl. 4—562 **7 Claims**



1. A device for transporting a patient to a bathtub and for supporting the patient in the bathtub during bathing, said device comprising an elongated generally rectangular frame including first and second side runs, a foot run and a head run, with said foot run being generally co-planar with said side runs to minimize the height thereof when said device is supported in a bathtub, a web connected to said runs to support a patient thereon and the patient's legs in a generally straight position, said web including a seat portion which forms a pocket extending substantially below the side runs and including means for loading the appliance and patient into a bathtub without requiring the attendant to handle the entire load, said means comprising a U-shaped fulcrum frame which surrounds the poc'.et to protect the hips of the patient and has a lower fulcrum run for supporting the device and patient on the rim of a tub for pivoting the frame about a vertical axis to swing the foot of the frame and the patient from a first position with the feet of the patient outside the tub to a second position with the foot of the frame in the tub and to support the patient in an inclined position in the tub, and support means on said fulcrum bar projecting rearwardly therefrom to minimize forward slippage of said device during swinging movement of said device while supported on the rim of the tub.

4,338,692

BODY-SUPPORT FLOATATION SYSTEM

Philip J. Santo, 130 Larkspur La., Rochester, N.Y. 14622

Filed Feb. 11, 1977, Ser. No. 767,808

Int. Cl.³ A47C *29/00*

U.S. Cl. 5—451 **1 Claim**

1. A floatation system for supporting at least a portion of the human body, said floatation system comprising:

a flexible enclosure; a gel-like substance encapsulating a plurality of air pockets within said enclosure for uniform distribution of body supportive forces by the floatation system, wherein said gel-like substance is water and a gelatinizing agent reversibly reactive with said water to form said gel, so that said gel-like substance is readily broken down into its original components, such agent being amoniated salt of Carbopol resin supended in a carrier, said Carbopol being of a weight between 0.15% and 0.30% of said water with which it is ultimately mixed; and a fungicide to prevent bacterial growth within said gel.

4,338,693

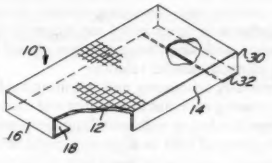
ONE-PIECE QUILTED MATTRESS SHIELD

Joseph W. Vitale, Charlotte, N.C., assignor to Perfect Fit Industries, Inc., Monroe, N.C.

Continuation of Ser. No. 715,732, Aug. 19, 1976, abandoned, which is a continuation-in-part of Ser. No. 539,131, Jan. 7, 1975, abandoned. This application Jan. 18, 1980, Ser. No. 113,151

Int. Cl.³ A47G *9/02*

U.S. Cl. 5—500 **1 Claim**



1. A quilted mattress shield comprising:

a quilted top portion substantially the same size and shape of the top of the mattress which it is adapted to cover;

a pair of quilted sidewall portions depending from and integral with said top portion, said quilted sidewall portions being adapted to cover the sidewalls of the mattress;

a pair of quilted end wall portions depending from and integral with said top portion, said quilted end wall portions being adapted to cover the end walls of the mattress;

means securing adjacent side edges of each pair of side and end walls portions together to form the vertical corners of the mattress shield;

a plurality of non-elastic bottom portions each having at least two layers of fabric, each bottom portion being connected to at least one of the end and sidewall portions and being generally parallel to said top portion for contact with only a peripheral corner portion of the bottom surface of the mattress;

said bottom portions being right triangular in configuration and connected to the corners of the shield;

each triangular bottom portion being formed by a diagonal fold line of a rectangular piece of material, the side edges of the triangular portion being joined by stitch means to adjacent edges of said side and end wall portions.

4,338,694

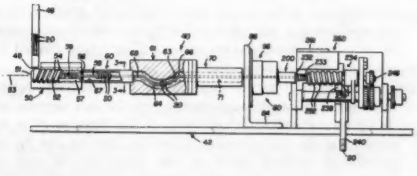
FASTENER ORIENTING, TAPPING AND COLLECTION SYSTEM

John H. Steward, Bloomfield Hills, and Harold A. Ladouceur, Livonia, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Filed May 20, 1980, Ser. No. 151,549

Int. Cl.³ B23G *1/18, 11/00*

U.S. Cl. 10—72 R **6 Claims**



1. In a continuous method of orienting and tapping nuts, each nut having a generally rectangular body portion comprising a rectangular central pilot portion having top and bottom

faces, flange portions extending from opposed sides of said pilot portion and a central bore extending through said pilot portion generally perpendicular to said top and bottom pilot faces, said method comprising the steps of:

(a) advancing said nuts in continuous succession along an established feed path of travel of a machine parallel to the axes of said nut bores with said pilot portions of said nuts all facing in one direction and said flange portions in random orientation;

(b) continuously advancing and orienting said nuts by successively rotating each nut of a first group of said nuts in a first direction to an initial first predetermined angular orientation with said flange portions of said first group of nuts oriented in aligned parallel relation;

(c) continuously advancing and orienting said nuts by successively rotating the remaining second group of nuts in a second direction to an initial second predetermined angular orientation with said flange portions of said second group of nuts in aligned parallel relation;

(d) continuously advancing and orienting said nuts by successively rotating each nut of said first and second group of nuts into aligned relation with said flange portion of said first and second group of nuts in aligned parallel relation;

(e) successively tapping each nut bore as the nuts are advanced on the feed path of travel of said machine while maintaining the aligned relation of said flange portions of said nuts; and

(f) advancing said tapped nuts to a discharge position of the feed path for removal therefrom while maintaining the angular orientation of said nuts.

4,338,695

SHOE UPPER CONFORMING MACHINE

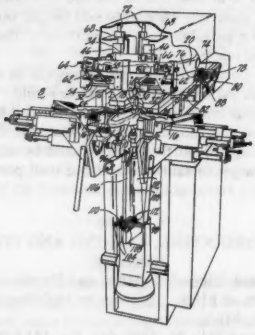
William H. Berrill, and George H. Bosworth, both of Leicester, England, assignors to USM Corporation, Farmington, Conn.

Filed May 31, 1980, Ser. No. 135,978

Claims priority, application United Kingdom, Apr. 28, 1979, 7914851

Int. Cl.³ A43D *21/00, 23/00*

U.S. Cl. 12—10.1 **16 Claims**



1. A shoe upper machine for use in the lasting of side portions of shoe uppers comprising:

a support for a shoe last on which an upper, the side portions of which are to be lasted, and an insole are positioned, has thereadjacent a pair of side lasting assemblies arranged so as to act on opposite side portions of an upper placed on a last support by said support;

cement applying means and means for effecting relative movement between said means and the last support in a direction extending lengthwise of the bottom of a shoe supported on said support, whereby cement can be progressively applied, prior to the operation of said side lasting assemblies, between marginal portions of the insole and shoe upper in the region thereof to be lasted;

said cement applying means comprising a pair of nozzles which are arranged to apply the cement along opposite marginal portions simultaneously and at least one of said nozzles is movable transversely of the shoe bottom under the control of a guide mechanism associated therewith from a first to a second predetermined position during the relative movement between the cement applying means and the last support as aforesaid;

actuating means being provided for actuating said guide mechanism to enable such transverse movement to take place at a selected stage in said relative movement, said nozzle guidance mechanism associated with said one nozzle comprises an abutment engageable by a portion of said nozzle.

4,338,696

APPARATUS FOR SHAPING COUNTERS IN MAKING SHOES

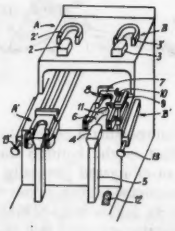
Lucien Bichet, Draveil, France, assignor to Societe Immobiliere et Financiere Suchet-Alfort (S.I.F.S.A.), Maisons Alfort, France

Filed Aug. 1, 1980, Ser. No. 174,654

Claims priority, application France, Aug. 3, 1979, 79 19929

Int. Cl.³ A43D *11/00*

U.S. Cl. 12—54.3 **8 Claims**



1. In an apparatus for bending and shaping counters in the course of manufacturing shoes and which includes at least one preform shaper and at least one last operatively positioned and arranged to engage one another and clamp a shoe piece, which is to be formed into a shoe upper, tightly therebetween, the improvement comprising means for initially holding a shoe piece on said last and fitting it to a given height of a shoe upper, means for positioning the shoe piece including means for holding said preform shaper on the shoe piece under a slight pressure; and means for bending and shaping the shoe piece into a shoe upper by applying a pressure of from about 5 kg/cm^2 to about 6 kg/cm^2 to the shoe piece between said last and said shaper, wherein said means for initially holding and positioning a shoe piece on said last includes first stop means in form of a pin operatively positioned to come to rest on said last and second stop means operatively positioned to define the height of an upper and to come rest on an edge of a shoe piece when it is fit on said last.

4,338,697

SIMPLIFIED POOL CLEANING APPARATUS

Caleb Broadwater, 21005 Reynolds Dr., #10, Torrance, Calif. 90503

Filed Aug. 14, 1980, Ser. No. 178,098

Int. Cl.³ E04H *3/20*

U.S. Cl. 15—1.7 **12 Claims**

1. A simplified, self-contained, pool cleaning apparatus adapted for the cleaning of pool surfaces comprising:

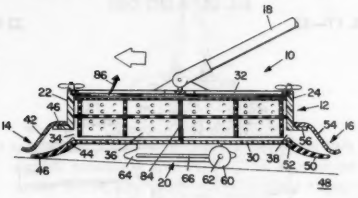
a filter body having a bottom, an open top, two sides, a front and a back defining a filtering zone;

first means associated with an opening in the front of said filter body for collecting and introducing pool water and debris into said filter zone during forward movement of said filter body, said first debris collecting means including a first lower resilient lip across said filter body front

for contacting and scraping debris from said pool surfaces, said first lower lip being sufficiently stiff to support said apparatus during forward movement of said apparatus;

second means associated with an opening in the back of said filter body for collecting and introducing pool water and debris into said filter zone during backward movement of said filter body, said second debris collecting means including a second lower resilient lip across said filter body back for contacting and scraping debris from said pool surfaces, said second lower lip being sufficiently stiff to support said apparatus during backward movement of said apparatus;

filter means located within said filtering zone for filtering said debris from pool water as it passes from said debris collecting means through said filter zone and out of said filter body;



handle means mounted to said filter body for providing manual movement of said filter body in said forward and backward directions, said handle means being mounted at a fixed location on the top of said filter body substantially equidistant from said filter body back and front; and

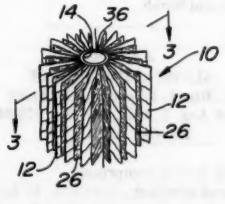
wheel means for facilitating forward and backward movement of said filter body on said pool surfaces for collection of debris in said first and second debris collecting means respectively said wheel means being mounted movably to the bottom of said filter body for movement forward and rearward of the fixed handle means mounting location whereby pressure may be exerted through said handle means to lower resilient lips during forward and rearward movement of said filter body to provide scraping of debris from said pool surfaces.

4,338,698

VEHICLE CLEANING BRUSH HAVING LIMITED PENETRATION

Carl C. Beer, Philadelphia, Pa., and Robert A. Seng, Waterford, N.J., assignors to Sherman Industries, Inc., Palmyra, N.J.

Filed Jun. 9, 1980, Ser. No. 157,593
Int. Cl.³ A46B 7/10; B60S 3/06
U.S. Cl. 15—230.16 **3 Claims**



1. A rotatable cloth scrubbing brush for cleaning the exterior of a vehicle comprising:

a. a rotatable shaft of hub;

b. a plurality of cloth wiping members for contacting the surface to be cleaned, said cloth wiping members being connected at one end to said rotatable shaft or hub; and

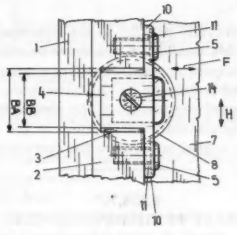
c. a plurality of bristle members having a shorter overall length than said cloth wiping members said bristle members being interleaved between rows of said cloth wiping members and being connected at one end to said rotatable shaft or hub, so that said cloth wiping members overlap free ends of said bristle members when said shaft or hub is rotated whereby said bristle members support said cloth wiping members as said cloth wiping members overlap said bristle members and said bristle members limit the penetration of said cloth wiping members into that portion of the vehicle being cleaned.

4,338,699

FURNITURE HINGE

Erich Röck, Höchst, Austria, assignor to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed May 1, 1980, Ser. No. 145,474
Claims priority, application Austria, May 7, 1979, 3369/79
Int. Cl.³ E05D 7/04
U.S. Cl. 16—237 **10 Claims**



1. A furniture assembly comprising furniture side walls, a door frame attached to said side walls and defining an opening, a door, and a least one hinge connected to said door and mounting said door to open and close said opening, said assembly further comprising:

a recess formed in a vertical portion of said frame;

a fastening member fastened to said frame and having a portion extending into said recess;

said fastening member having a rear wall having therein a generally horizontal slot open at an end thereof facing away from said frame;

said hinge including a hinge arm;

screw means extending through said slot and into said hinge arm for mounting said hinge arm on said fastening member, whereby the position of said hinge and said door are adjustable horizontally with respect to said frame and said fastening member; and

the height of said recess being greater than the width in the vertical direction of said portion of said fastening member, whereby the position of said fastening member, said hinge and said door are adjustable vertically with respect to said frame.

4,338,700

APPARATUS FOR ELECTRICALLY STUNNING ANIMALS TO BE SLAUGHTERED

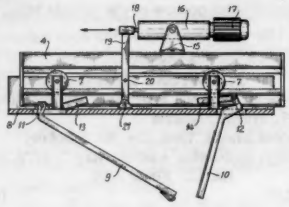
Johan W. Nijhuis, Winterswijk, Netherlands, assignor to Machinefabriek G.J. Nijhuis B.V., Winterswijk, Netherlands

Filed May 8, 1980, Ser. No. 147,827
Claims priority, application Netherlands, May 10, 1979, 7903681
Int. Cl.³ A22B 3/06
U.S. Cl. 17—1 E **12 Claims**

1. An apparatus for electrically stunning animals to be slaughtered, comprising:

two endless conveyors, said conveyors being operable to run parallel to each other and at a synchronized rate and being positioned to form a substantially V-shaped passageway therebetween; and

first and second electrodes, said electrodes being adapted to engage the head of the animal to be stunned as the animal is moving on the conveyors, said electrodes being further adapted to extend downwardly toward said V-shaped passageway and to clear said passageway, said electrodes being mounted in a frame, said frame being arranged above said conveyors and being operable to move in a



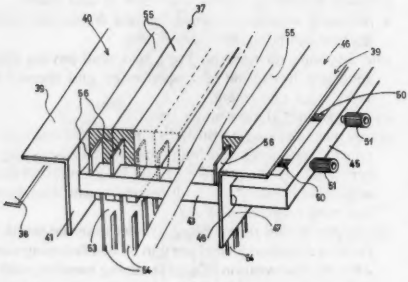
direction generally parallel to the conveyors, said frame being operably connected to a drive mechanism which is adapted to impart a reciprocating movement to said frame as the animal is moving on the conveyors, such that the rate of forward movement of the electrodes mounted in the frame substantially corresponds to the rate of movement of the animal moving on the conveyors.

4,338,701

MEAT TENDERING DEVICE

Philippe d'Arras, Paris, France, assignor to Societe Anonyme dite COUPAX, France

Filed Sep. 3, 1980, Ser. No. 183,801
Claims priority, application France, Sep. 4, 1979, 79 22080
Int. Cl.³ A22C 9/00
U.S. Cl. 17—25 **5 Claims**



1. A meat tenderizing device comprising:

A. a supporting frame;

B. a base connected at the bottom of said supporting frame, said base adapted to receive the meat to be tenderized;

C. a movable blade holder assembly on said supporting frame, said blade holder assembly being movable toward and away from said base and further comprising:

i. a framework including:

(a) a pair of clamping flanges in spaced relation to each other;

(b) a pair of rods in substantially parallel spaced relation to each other extending between said clamping flanges;

ii. a plurality of independently removable cutting blades carried side by side in said framework each of said blades including:

(a) a back, said back being thicker than said blade, said back defining spaces between each of said blades carried by said framework, said blades being mutually engaged by said clamping flanges;

(b) said backs having ends, extensions from said ends, said extensions supported on said rods;

iii. a plate having a lower surface located above said backs in substantially non-yielding engagement therewith; and

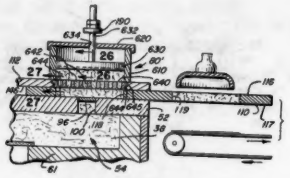
D. grid elements located above said base, said grid elements defining spaces therebetween, said blade holder assembly facing said grid with said blades positioned to pass through said spaces.

4,338,702

APPARATUS FOR MAKING A GROUND FOOD PATTY

Harry H. Holly, 150 Key Palm Rd., Boca Raton, Fla. 33432

Division of Ser. No. 25,031, Mar. 29, 1979, Pat. No. 4,272,864.
This application Mar. 6, 1981, Ser. No. 241,468
Int. Cl.³ A22C 7/00
U.S. Cl. 17—32 **22 Claims**



1. An apparatus for molding a patty of plastic food material, such as ground meat and the like, which is subject to shrinkage during cooking, said apparatus comprising:

(a) a supply means for holding said food material;

(b) a pressurizable feed chamber communicating with said supply means to receive said food material therefrom;

(c) means for forming food material plugs, said plug forming means communicating with said pressurizable feed chamber and including a plurality of plug forming cavities with each plug forming cavity having an open end, said plug forming means further having a pressurizing piston slidably disposed within each plug forming cavity and means for moving each piston toward at least the plug forming cavity open end;

(d) pressurizing feed means for feeding said food material under pressure within said pressurizable feed chamber and into said plug forming means whereby said plug forming cavities are filled with food material; and

(e) a mold having a mold opening and means for moving said mold for aligning said mold opening with the open ends of said plug forming cavities whereby said pistons can be moved toward the open ends of their respective plug forming cavities to discharge plugs of food material into said mold opening in a closely packed array to form a patty within said mold.

4,338,703

SUPPORTING DEVICE

James H. Tanner, Rte. 1, Waycross, Ga. 31501

Filed Aug. 7, 1980, Ser. No. 175,942
Int. Cl.³ A22B 5/06
U.S. Cl. 17—44 **14 Claims**

1. A supporting device comprising:

a first elongated member;

a second elongated member having a first end fixedly attached perpendicularly to a first end of the first member;

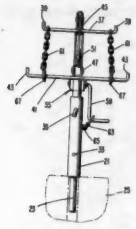
a first cross bar fixedly attached perpendicularly to the second member at a second end of the second member; and

means for mounting the first member to a support such that the first member is rotatable about a longitudinal axis of the first member, said means for mounting comprising

a sleeve arranged around a portion of the length of the first member;

a first plurality of bores arranged along diameters of the sleeve;

a second plurality of bores arranged along diameters of the first member, each of said second plurality of bores being adapted to selectively align with one of the first plurality of bores in the sleeve; and



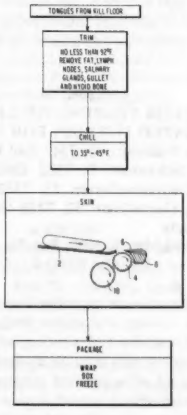
a removable pin for selectively holding the first member against rotational and longitudinal movement relative to the sleeve, said pin being selectively engagable with the first member and the sleeve through one of the first plurality of bores in the sleeve and an aligned one of the second plurality of bores in the first member.

4,338,704

METHOD FOR PROCESSING BEEF TONGUES

Myron L. Welton, and Gary L. Sheneman, both of South Sioux City, Nebr., assignors to Iowa Beef Processors, Inc., Dakota City, Nebr.

Filed Oct. 11, 1979, Ser. No. 83,695
Int. Cl.[3] A22B *5/16;* A22C *17/12*
U.S. Cl. 17—50 **11 Claims**



1. A method of processing beef tongues, comprising the steps of

increasing the rigidity of the tongue by chilling it,

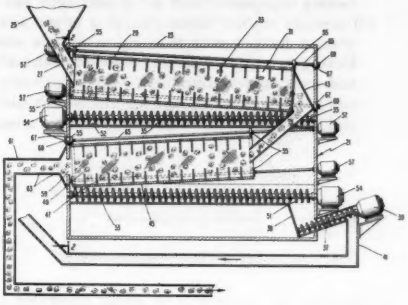
slicing the skin from one surface of the chilled tongue while the tongue is in an unfrozen state, said slicing step being performed by supporting the tongue on a surface and moving it into a blade which has a cutting edge spaced above the surface, and repeating the slicing step to remove the skin from other surfaces of the tongue.

4,338,705

METHOD AND APPARATUS FOR REMOVING TRASH FROM MATERIAL

Joseph K. Jones, Raleigh, N.C., assignor to Cotton Incorporated, New York, N.Y.

Filed Feb. 6, 1980, Ser. No. 118,977
Int. Cl.[3] D01G *9/00*
U.S. Cl. 19—80 R **16 Claims**



1. A method of removing trash from a material comprising the steps of:

feeding the material to an inside of a drum having a screen surrounding the drum;

rotating the drum;

cyclically lifting the material toward an upper portion of the drum and dropping the material directly onto the screen at a lower portion of the drum with a plurality of finger-shaped baffles arranged in two parallel rows disposed 180° apart within the drum and arranged parallel with each other with each of the baffles comprising an elongated thin rod extending inwardly along a radius of the drum to break up clusters of material and separate the trash;

producing a substantially vibratory action with the combined cyclical lifting and dropping of the material and the rotation of the drum; and

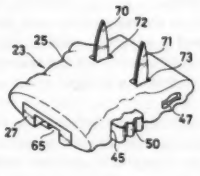
permitting the relatively heavy trash to drop through the screen while retaining the remaining material.

4,338,706

ADJUSTABLE FASTENER

Tsunetaka Aoki, Kamiichi, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed Mar. 10, 1980, Ser. No. 129,072
Claims priority, application Japan, Mar. 19, 1979, 54-35385[U]
Int. Cl.[3] A44B *21/00*
U.S. Cl. 24—70 R **9 Claims**



1. An adjustable fastener for interconnecting a first part and a second part, comprising:

(a) an elongated rack adapted to be secured to the first part and having a row of teeth; and

(b) a slider adapted to be fastened to the second part and movable on and along said rack for locking engagement therewith at a selected position, said slider comprising:

(1) a housing having a longitudinal channel for passage therethrough of said rack, said housing comprising a shell having a groove extending transversely of and opening toward said channel, a guide frame mounted in said shell and having said channel, and a retainer mounted on said shell holding said guide frame in said shell;

(2) a locking member slidably held within said groove for locking engagement with one of said teeth; and

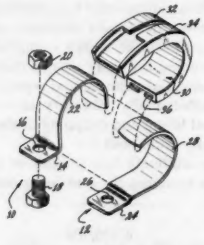
(3) elongate resilient means extending in and along said channel for normally retaining in its free state said locking member in locking engagement with said one of said teeth, said locking member being movable along said groove out of locking engagement with said one of said teeth against the force of said resilient means.

4,338,707

CLAMP

Robert M. Byerly, Burbank, Calif., assignor to TA Mfg. Corp., Glendale, Calif.

Filed Mar. 10, 1980, Ser. No. 128,663
Int. Cl.³ B65D *63/00*
U.S. Cl. 24—257 **13 Claims**



1. In combination for clamping a cable,

a first strap having a flat portion and having a portion extending in a loop from the flat portion in a clockwise direction,

a second strap having a flat portion and having a portion extending in a loop from the flat portion in a counterclockwise direction,

the looped portions having surfaces disposed in mating relationship to define a clamp and having their flat portions disposed in adjacent relationship, the surfaces on the first and second straps with the mating relationship being smooth to facilitate a slidable relationship between such surfaces,

the first and second straps being made from a material having springlike characteristics to adjust the area encompassed by the clamp in accordance with pressures exerted on the flat portions for bringing the flat portions of the first and second straps into abutting relationship, and

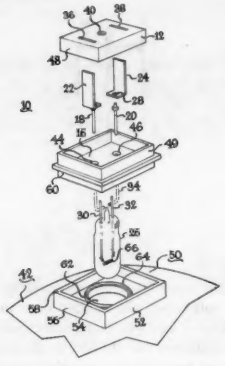
cushion means made from a resilient material and enveloping the looped portions defined by the first and second straps of the clamp and having properties of distributing the forces exerted by the cable on the clamp, the cushion means being constructed to provide a guide for the sliding movement of the looped portions of the first and second straps relative to each other.

4,338,708

LAMP ASSEMBLY METHOD

James M. Hanson, Euclid, and Irving Bradley, Novelty, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 58,061, Jul. 16, 1979, Pat. No. 4,282,565.
This application Sep. 15, 1980, Ser. No. 186,902
Int. Cl.³ H01J *9/30*
U.S. Cl. 29—25.13 **8 Claims**



1. A method of assembling a prefocused light source mount for a reflector lamp which comprises:

(a) inserting at least two lead wires which serve to connect to a light source each joined by electrical connecting means into the cavity of a plastic block member having mating parts comprising an inner container member fitted into an outer housing member,

(b) assembling said inner and outer members together to form a leak-proof enclosure,

(c) filling said cavity with an elastomeric polymer to further provide a leak-proof seal around the lead wires, and

(d) joining a light source to the ends of said lead wires with the position of said light source being fixed with respect to a locating surface on the assembled block member.

4,338,709

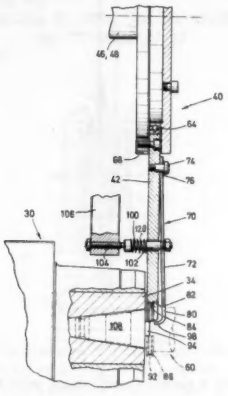
MAGAZINE FOR STORING TOOLHOLDERS WITH TOOLS MOUNTED THEREIN FOR MACHINE TOOLS

Hans F. Straub, Nuberstr. 31, 7347 Bad Überkingen; Adalbert Kindermann, Schwabstr. 7, 7332 Eislingen/Fils; Friedrich Burkhardt, Brunnenweilerstr. 13, 7332 Eislingen/Fils, and Hans Staiger, Oechslinstr. 32, 7320 Göppingen, all of Fed. Rep. of Germany

Filed May 1, 1979, Ser. No. 35,058
Int. Cl.³ B23Q *3/157*
U.S. Cl. 29—26 A **4 Claims**

1. A tool holder support assembly for use in association with a machine tool, having a machine bed, a column assembly mounted on said machine bed, a tool spindle and slide assembly slidably mounted on said column assembly, a base having a worktable mounted adjacent said column assembly; the tool holder support assembly mounted on said column assembly for storing tool holders with a flanged end including a peripheral groove therein and opposite side recesses, the combination comprising: a tool holder magazine having an outboard face in a vertical plane, means for supporting said magazine for indexed movement into tool changing positions with respect to the tool spindle, said magazine having a peripheral edge configured to form a plurality of spaced, peripheral tool holder sockets on said magazine, each of said tool holder sockets including a semi-circular centering web adapted to engage the peripheral groove on the flanged end of a tool holder when supported by said magazine, a plurality of spaced, flat sector

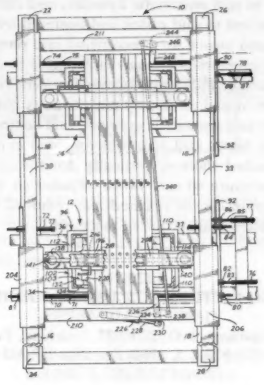
shaped tool holder means having opposite ends, means mounting one end of each of said tool holder means on said tool holder magazine at the outboard face thereof, each of said tool holder means having a semicircular tool holder socket formed at the other end thereof, said tool holder means further including a pair of arms located on opposite sides of the circumference of a tool holder engaged by said centering web, a locking means mounted on each of said arms selectively movable into the side recesses of the flanged end of a tool holder for locking a tool holder in said magazine by urging the flanged end thereof in a direction to cause the peripheral groove thereof to



be held on one side by said centering web, each of said locking means including a bent end portion on each of said arms directed inboard of one of said magazine sockets so as to seat in the side recesses of a tool holder, thereby to securely lock the tool holder in engaged relationship with said centering web so as to prevent tilt of the tool holder from a para-axial alignment with the tool spindle when a tool holder is loaded to or from the tool spindle, and operating means independent of the tool spindle for moving each of said tool holder means from a locking position in juxtaposed position with said outboard face into a release position spaced from said outboard face to unlock each of said tool holders from said magazine.

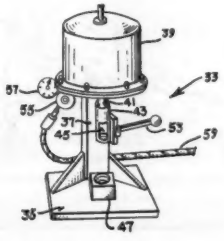
4,338,710
APPARATUS FOR FORMING BORES
Ken V. Stursa, 4895 Futura St., Eugene, Oreg. 97404, and Amos A. Horner, Star Rte., Box 92, Cascadia, Oreg. 97329
Filed Feb. 20, 1980, Ser. No. 122,982
Int. Cl.[3] B23B *47/18*
U.S. Cl. 29—26 A **10 Claims**

1. Apparatus for forming bores in articles comprising:
conveying means operable for transporting the articles to a work station;
stop means disposed adjacent said work station selectively operable for arresting downstream travel of the course;
charging means operable for isolating a predetermined course of the articles from said conveying means at said work station and maintaining the course substantially stationary;
drilling means disposed adjacent said work station and beneath the course operable for selective shifting vertically upwardly for drilling bores in the course; and
stabilizing means disposed above said conveying means, said charging means also including lift means selectively operable for engaging and shifting the course upwardly from



said conveying means to a position for clamping the course against said stailizing means.

4,338,711
BRAKE ADJUSTER TOOL
John T. Wright, Box 254, Greensboro, Md. 21639
Filed Oct. 9, 1980, Ser. No. 195,694
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—251 **1 Claim**



1. A brake adjuster device for assembling and disassembling a brake adjuster on the landing gears of large aircraft, said brake adjuster device comprising:
means for supporting said brake adjuster, said support means including a base portion with an upright portion extending vertically upward therefrom;
means for guiding said brake adjuster, said guiding means including a housing die affixed to said base portion, said housing die having a machined opening in the upper surface thereof and a plurality of shoulders and grooves corresponding to the configuration of one end surface of said brake adjuster, a cylindrical compression die tube that inserts into the other end of said brake adjuster, said compression die tube having window portions cut away from the wall thereof to allow installation and removal of retaining rings on said brake adjuster, and a guide bullet inserted into the end of said brake adjuster that receives said compression die tube, said guide bullet guides said compression die tube during insertion into said brake adjuster; and
means for providing pressure, said pressure providing means including an air pressure regulator for receiving pressurized air, a pressure gauge for measuring air pressure from said air pressure regulator, a pneumatic cylinder for re-

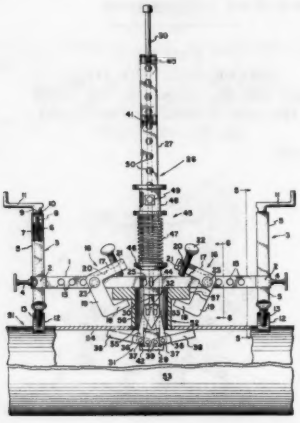
ceiving said regulated air pressure attached to the upper end of said upright portion, said cylinder having a pneumatic piston therein for vertical movement in response to pressure in said pneumatic cylinder, said compression die tube attached to said piston and centered over said housing die, and means for pressurizing said pneumatic cylinder, said pressurizing means including a three-way pneumatic control valve and actuating lever for controlling the operation of said three-way pneumatic control valve connected to said pneumatic cylinder, said control valve upon actuation biases said piston having said compression die tube attached thereon vertically downward thereby applying pressure to said brake adjuster so that retaining rings therein can be released and removed during disassembly and installed during assembly.

4,338,712

WELDING FIXTURE FOR USE IN JOINING TWO TUBULAR MEMBERS

Timothy C. Dearman, P.O. Box 937, Pearland, Tex. 77581

Filed Sep. 2, 1980, Ser. No. 183,313
Int. Cl.³ B23K *37/04*
U.S. Cl. 29—281.6 **14 Claims**



1. A fixture for use in joining a tubular fitting to a base member having an opening therein, said fixture comprising a body for supporting said fitting; support means carried by said body for engagement with said base member at its exterior and operable to space said body at a selected distance from said base member; anchor means carried by said body, one end of said anchor means being movable into and out of said base member via said opening; retainer means carried by said anchor means at said one end thereof for movements between retracted and extended positions in which said retainer means is respectively disabled from and enabled to engage said base member at its interior; and operating means for moving said retainer means between said positions.

4,338,713

METHOD OF MANUFACTURE OF POWDERED METAL CASING

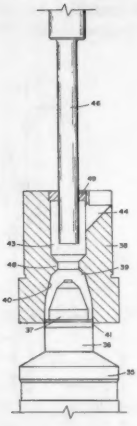
Glenn B. Christopher, Fort Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Division of Ser. No. 887,567, Mar. 17, 1978, Pat. No. 4,220,687. This application Apr. 21, 1980, Ser. No. 142,570
Int. Cl.³ B22F *3/24*
U.S. Cl. 29—420.5 **12 Claims**

1. The method of forming a shaped charge powdered metal casing for use in an oil well perforating gun comprising the steps of:

providing a mix of about 80 percent by weight of a powdered metal having a diameter of approximately 100 microns, about 19 percent by weight of powdered lead having a diameter of approximately 100 microns, and about one percent by weight of graphite powder;

placing said mix in a mold having one movable wall, said



mold having a generally bell shape with an open end and a closed end;

moving said movable wall of said mold and compressing the mix within said mold until approximately 120,000 PSI is exerted upon the mix within said mold to form a green compact;

removing the compressed mix from the mold; and

forming a hole through the closed end of said compressed mix.

4,338,714

METHOD OF LOADING HOLLOW RIVETS ON A MANDREL

John Powderly, Birmingham, England, assignor to USM Corporation, Farmington, Conn.

Division of Ser. No. 912,373, Jun. 5, 1978, abandoned. This application Jun. 25, 1980, Ser. No. 162,829
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—433 **4 Claims**

1. A method of loading a pull-through, blind-riveting mandrel with a column of headed hollow rivets having stem portions to be set thereby comprising:

assembling the rivets in a head-to-tail relation on an elongated tubular sleeve having an engagement means disposed at one end for retaining said rivets on said sleeve,

and positioning the head of the first rivet being placed nearest the engagement means;

introducing the mandrel inside the sleeve from an end of the sleeve opposite the engagement means;

while the mandrel is inside the sleeve; and then relatively withdrawing the mandrel from the sleeve transferring the rivets onto the mandrel.

4,338,715

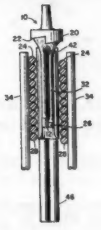
METHOD FOR INSERTING A VOID PLUG INTO A LIFT INSERT FOR A CONCRETE PRODUCT

Billy G. Capers, Canton, Tex., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Jun. 12, 1980, Ser. No. 158,989

Int. Cl.³ B23P *11/02*

U.S. Cl. 29—451 **9 Claims**



1. A method for insertion of a threadless, tubular plug into a cylindrical insert for receiving a lifting device, prior to imbedment of said insert in a concrete product, and wherein said plug includes an elastomeric tubular body member closed at an upper end and open at a lower end and having an upper insert end abutment means adjacent said closed end and a lower insert end abutment means adjacent said open end, said method comprising:

(a) laterally inserting the flattened and then folded open end and lower insert abutment means of said plug into a longitudinal slot of a width sufficient therefore in a tubular tool member;

(b) longitudinally inserting said plug and said tubular tool member into the top of said cylindrical insert;

(c) longitudinally stretching said plug by frictional engagement thereof with said tubular tool member and engagement of said upper abutment means with said insert while, contemporaneously, longitudinally withdrawing said tubular tool member from said insert; and

(d) compressively affixing said lower abutment means in overlying intimate contact with the lower end of said insert upon total withdrawal therefrom of said tubular tool member so as to place the intermediate portion of said plug between said upper and lower abutment means in tension.

4,338,716

PLASTIC PIPE PROVIDED WITH A GROOVE

Roelof H. Marissen, Bergentheim, and Joannes H. Beune, Hardenberg, both of Netherlands, assignors to Wavin B.V., Em Zwolle, Netherlands

Filed Dec. 28, 1979, Ser. No. 108,050

Claims priority, application Netherlands, Jan. 9, 1979, 7900173

Int. Cl.³ B29D *23/00*

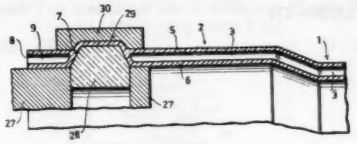
U.S. Cl. 29—456 **6 Claims**

1. A method of forming a plastic pipe with at least one groove, said plastic pipe having a first pipe part with an inner wall, an outer wall, longitudinally extending channels, and longitudinally extending partitions therebetween, said method comprising the steps of:

heating the first pipe part;

applying a groove-forming member with a mold and a mandrel core at least at a short distance from an end of the first pipe part; and

expanding the mandrel core toward the mold so that the



longitudinally extending channels between the mandrel core and the mold are pressed tightly toward each other; thereby forming at least one groove in the first pipe part of the plastic pipe.

4,338,717

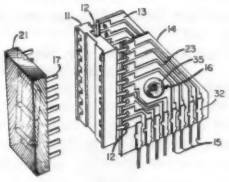
METHOD FOR FABRICATING A LIGHT EMITTING DIODE DISPLAY SOCKET

Neil F. Damon, Fort Pierce, Fla., assignor to Augat Inc., Attleboro, Mass.

Filed Sep. 2, 1980, Ser. No. 183,181

Int. Cl.³ B23K *31/02*

U.S. Cl. 29—839 **8 Claims**



1. A method for fabricating a socket for a light emitting diode having a dual-in-line configuration of terminals extending from one side thereof, the socket being comprised of a receiving socket having contact terminals extending from one side thereof in dual-in-line configuration, said method comprising the steps of:

forming at least two printed circuit cards with a plurality of contact pads adjacent each of first and second edges, one contact pad at each said edge being connected by means of a printed circuit path to a pad at the other said edge;

forming a first hole through each of said contact pads at said first edge of each said printed circuit card;

forming at least one second hole intercepting each of said contact pads along said second edge of each said printed circuit card;

aligning first and second said printed circuit cards in adjacent spaced planar relationship with said first edges in parallel juxtaposition and said second edges aligned;

placing a terminal against each said contact pad along said second edge, said terminal having a tab projecting into said at least one hole intercepting said contact pads;

inserting said contact terminals of said receiving socket into said holes in said pads along said first edge of said printed circuit cards, said contact terminals in one line being inserted into said holes in one of said printed circuit cards;

simultaneously soldering said terminals and said contact terminals to said printed circuit cards; then

rotating said first and second printed circuit cards toward each other to a parallel spaced confronting relationship thereby deforming said contact terminals; and then

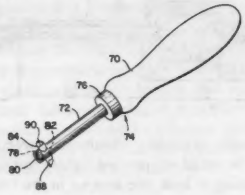
fixing said first and second printed circuit cards permanently in said spaced relationship.

4,338,718

GROUT REMOVING TOOL

E. Alfred Olkkola, 24 Wilson Rd., West Yarmouth, Mass. 02673

Filed Mar. 31, 1980, Ser. No. 136,167
Int. Cl.³ B25B *17/00*
U.S. Cl. 30—171 **3 Claims**



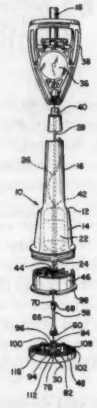
1. A grout removing tool for removing cracked and worn grout from between tiles comprising a handle having an elongated one piece shaft secured thereto and a single grout cutting blade member removeably and adjustably secured within and adjacent to the end of the shaft, said blade member having an elongated and tapered cutting edge on one end thereof and a short stubby tapered cutting edge on the opposed end of the said blade member.

4,338,719

FILAMENT TYPE VEGETATION TRIMMER

Robert F. Burkholder, Easton, Md., assignor to Black & Decker Inc., Newark, Del.

Filed Aug. 8, 1980, Ser. No. 176,288
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 **29 Claims**



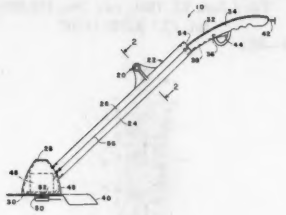
1. A filament type vegetation trimmer comprising:
a wand;
a housing, associated with said wand;
a prime mover carried by said housing and having a rotary output means associated therewith;
a slinger head drivingly coupled with said rotary power output means;
means for storing a supply of filament, said storage means being longitudinally spaced from said slinger head;
means for guiding a cutting end of said filament through a longitudinal passage to said slinger head;
a filament support tube positioned within said slinger head for redirecting said cutting end of filament from said longitudinal passage to rotate in a radial path in response to the rotation of the rotary output means; and
means provided in said filament support tube for cooling filament supported therein.

4,338,720

HOUSING AND FRAME SYSTEM FOR VEGETATION FILAMENT TRIMMER

Charles B. Pittinger, Sr., 902 N. Lake Dr., Weatherford, Tex. 76086, and Charles B. Pittinger, Jr., 320 Cockeys Mill Rd., Reisterstown, Md. 21136

Filed Sep. 5, 1980, Ser. No. 184,479
Int. Cl.³ A01D *50/00*
U.S. Cl. 30—276 **10 Claims**



1. In a system for trimming vegetation, having a housing, a shank connecting with the housing and serving as a conduit tube for an electric lead, air venting means for conducting cooling air to a motor within the housing, and means for holding connecting with the shank and including an elongate handle and a balancing handle, the improvement comprising in combination: the shank including dual tubes co-extensive from the housing to the elongate handle, a first of said dual tubes located for serving as a said conduit tube, a second of said dual tubes located as an extension tube for carrying clean air from a point relatively free of trimmings at an upper part of the handle downward through said housing, means connecting said dual tubes along said co-extension, and means for protecting an electric lead within said system from abrasion upon assembly in said system comprising all said housing, dual tubes and handle portion being on unitary structure free of fasteners for interconnecting same.

4,338,721

TINED UTENSIL

Dorothy O. Cauchon, 94 Prospect St., Belmont, Mass. 02178, and Rudolph Muto, 24 Williams St., Andover, Mass. 01810

Continuation of Ser. No. 965,942, Dec. 4, 1978, abandoned. This application Dec. 3, 1979, Ser. No. 99,635
Int. Cl.³ B26B *19/02*
U.S. Cl. 30—322 **3 Claims**

1. A utensil comprising:
an elongated handle having at one end at least one tine with a shank of predetermined diameter;
said tine having an enlarged spear head comprising a substantially conical free terminal tip and at least two substantially frustro-conical members, said members tapering, and having bases and peripheral edges of progressively

larger diameter from said free terminal, substantially conical, tip rearwardly toward said shank of said tine;

the said frustro-conical member of said spear head nearest said shank, being of substantially greater diameter at the base than the diameter of the shank of said tine to form the base of said spear head;

each said frustro-conical member including a plurality of longitudinally extending grooves at spaced angular distances therearound, each groove extending rectilinearly and continuously along the tapered exterior surfaces of said members from proximate said tip to proximate the base of said spear head;

whereby said grooves are each aligned along said tine.

4,338,722

OPTOELECTRONIC DISPLACEMENT SENSOR

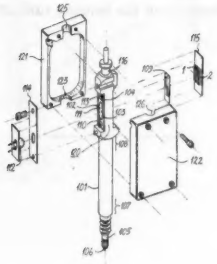
Jean R. Delmas, Vanves, France, assignor to Microlec, S.A., Fribourg, Switzerland

PCT No. PCT/FR79/00093, § 371 Date Jun. 16, 1980, § 102(e) Date Jun. 16, 1980, PCT Pub. No. WO80/00873, PCT Pub. Date May 1, 1980

PCT Filed Oct. 15, 1979, Ser. No. 195,009

Int. Cl.³ G01B *11/24*

U.S. Cl. 33—174 L **8 Claims**



1. An optoelectronic high precision dimension and displacement measurement device comprising:

a body;

a moving sensor stem having displacement to be measured, two guides incorporated in the body along which said stem slides in the body;

a contact tip at an end of the stem;

a light source and two adjacent photoreceivers symmetrically positioned on opposite sides of a stem axis;

a cover carried by the said moving stem having transparent and opaque parts and situated between the source and the photoreceivers whereby movement of the cover in first and second directions has the effect of increasing and reducing respectively the areas of the sensitive surfaces exposed to the light source of the two photoreceivers, said cover being substantially symmetrical with the contact tip of the stem relative to a center point between the two guides; and

two parallel plates disposed in said body forming a slideway, said plates being at an end of the moving stem other than the contact tip, a slide block sliding in said slideway, said slide block having an oblong transparent portion allowing light to pass from the light source to the photoreceivers and carrying the moving cover.

4,338,723

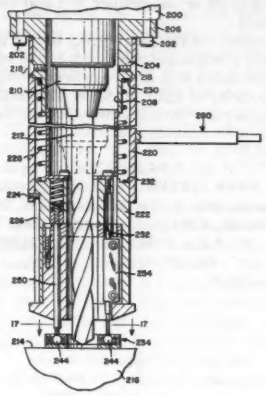
ANGLE MEASURING DEVICE

Harry L. Benjamin, Dayton, Ohio, assignor to Centro Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 843,414, Oct. 19, 1977, abandoned. This application Jan. 4, 1980, Ser. No. 109,722

Int. Cl.³ G01B *7/30*; G01C *9/06*

U.S. Cl. 33—174 L **14 Claims**



1. An angle measuring device, comrising:

a frame;

means providing a reference plane;

means interconnecting said frame and said reference plane means for two dimensional pivotal movement of said frame about a fixed location in said reference plane means, and for sensing the relative angular position between said frame and said reference plane means and providing electrical signals indicative of said position, and including a plurality of spaced sensing means disposed about an axis in said frame which intersects said reference plane at said fixed location, each said sensing means including a rod mounted in said frame for longitudinal movement parallel to said axis and pivotally connected to said reference plane means; and

means receiving said signals and providing an indication of said relative angular position.

4,338,724

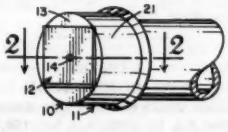
TOOL FOR POSITIONING AND DEFINING HOLES IN WALL PANELS

Russell D. Johnson, 2307 W. 14th Ave., Spokane, Wash. 99204

Filed Jun. 2, 1980, Ser. No. 155,557

Int. Cl.³ G01B *3/14*

U.S. Cl. 33—174 G **1 Claim**



1. A tool to positionally define the periphery of holes to be created in wall panels to service rough utility fixtures that are positioned in wall support frames with orifices substantially coplanar with the surface of such support, frames comprising, in combination:

a rigid planar template configured with a peripheral shape

substantially the same as that of an electrical junction box for which a hole is to be established;

mechanical means associated with the template to releasably maintain it on a rough utility fixture in position to define the periphery of a hole to be cut in a surrounding wall panel to service such electrical junction box comprising two fastening holes defined in the template to be coincident with two similar fastening holes in the junction box and two headed nails extending between cooperating fastening holes in the junction box and template respectively; and

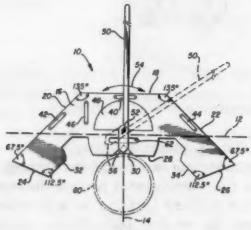
adhesive means, on the panel facing side of the template to releasably position and maintain it on the surface of a wall panel in which a hole is to be defined, comprising, a resilient tape body of some thickness structurally fastened to the template and having adhesive on its exposed surface.

4,338,725

PIPE FITTER'S QUICK SQUARE

Larry J. Martin, Rte. 8, Box 417, Longview, Tex. 75601, and John H. Gaddis, 618 Cynthia, Overton, Tex. 75684

Filed Jan. 6, 1981, Ser. No. 222,991
Int. Cl.³ G01B 3/14, 5/24
U.S. Cl. 33—174 N **12 Claims**



1. A pipe fitter's square comprising:

a planar member having first, second, third, fourth and fifth linear exterior edges;

said first edge extending parallel to the longitudinal axis of said planar member;

said second edge intersecting a first end of said first edge at a 135° interior angle;

said third edge intersecting a second end of said first edge at a 135° interior angle, said third edge essentially equal in length to said second edge;

said fourth edge intersecting said second edge at an end thereof opposite said first edge, said fourth edge having an interior angle of 67.5° with respect to said second edge; and

said fifth edge intersecting said third edge at an end thereby opposite said first edge, said fifth edge having an interior angle of 67.5° with respect to said second edge whereby said second and third edges when engaged with two intersecting pipes will position them at 90° and when said fourth and fifth edges are engaged with intersecting pipes will position them at 45°.

4,338,726

LINE BORE GAUGE

Charles W. Swailes, 18125 Renwick Rd., Azusa, Calif. 91702

Filed Jul. 14, 1980, Ser. No. 168,010
Int. Cl.³ G01B 5/08
U.S. Cl. 33—178 R **18 Claims**

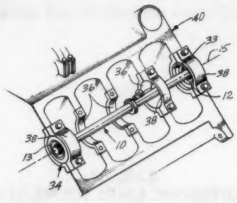
1. A line bore gauge for measuring, in an engine or the like having a series of at least three arcuate bearing seats with substantially common centers of curvature, a selected property of a selected bearing seat of the series at differing angular positions about a reference axis defined by the centers of curvature of a given pair of the remaining bearing seats of the series chosen for purposes of defining the reference axis for seats of interest, the line bore gauge comprising:

an elongate shaft;

a pair of toroid-shaped adaptors on the shaft, the adaptors having outer diameters corresponding to the chosen bearing seats for alignment of the shaft when in use with the centers of curvature of such respective chosen seats;

an axially positionable collar disposed upon the shaft between the adaptors;

a radial distance indicator mechanism;



means for coupling the radial distance indicator mechanism between the collar and the surface of the selected bearing seat, thereby to provide measurement of such bearing surface relative to the reference axis; and

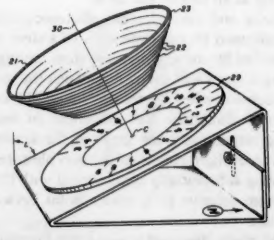
means for changing the angular position of the radial distance indicator mechanism about the reference axis thereby to vary the angular relation of the mechanism to the adjacent bearing surface to obtain measurements at different locations on the bearing surface.

4,338,727

SHADOWLESS SUNDIAL

Robert W. Gundlach, Victor, N.Y., assignor to Vencraft Corporation, West Henreitta, N.Y.

Filed Sep. 17, 1980, Ser. No. 188,142
Int. Cl.³ G04B 49/00
U.S. Cl. 33—269 **10 Claims**



1. A shadowless sundial comprising:

a. a body having a specularly reflecting surface forming at least a segment of a substantially annular surface perpendicular to its axis of curvature,

b. mounting means connected to said body for maintaining said axis approximately parallel to the axis of rotation of the earth, and

c. time scale means mounted in a plane parallel to said body at a distance from said body equal to the radius of curvature of said body so as to be coincident with the virtual image formed by the sun's reflection from said reflecting surface.

4,338,728

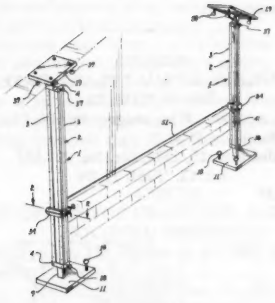
MASON'S GUIDE

Rick R. Valead, Phoenix, Ariz., assignor to Castle Rock Enterprises, Phoenix, Ariz.

Continuation of Ser. No. 116,354, Jan. 28, 1980, abandoned. This application Apr. 6, 1981, Ser. No. 251,578

Int. Cl.[3] G01C *15/10*

U.S. Cl. 33—406 3 Claims



1. A mason's guide system comprising at least two elongated rectangular bodies having indicia means longitudinally and adjustably disposed thereon; indicia locator means carried by each said body and adapted to longitudinal movement along said indicia means; line attachment means carried by each said locator means for securing a mason's line between said bodies; telescoping extensions carried by each said body interiorly and at both ends thereof having means for engagement with a floor and ceiling; said engagement means comprising a pedestal and a capital, respectively, at opposite ends of said extensions; said capital having screw means thereon for making fine adjustments and anchoring to a ceiling surface; said pedestal having screw means thereon for anchoring thereof to a floor surface; an articulated joint connection between said capital and the telescoping extension associated therewith; a rigid connection between said pedestal and the telescoping connection associated therewith; said indicia locator means comprises a collar slidably disposed on said body and a sight opening with a line indicator to indicate the precise position of the line relative said indicia means; and wear members attached to said rectangular bodies at the corners thereof.

4,338,729

ELECTROSTATIC METHOD AND APPARATUS FOR TREATING MATERIAL

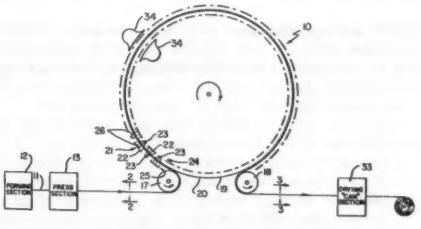
James T. Candor, 5440 Cynthia La., Dayton, Ohio 45429

Division of Ser. No. 124,224, Feb. 25, 1980, Pat. No. 4,283,862, which is a division of Ser. No. 50,807, Jun. 21, 1979, Pat. No. 4,208,807, which is a continuation-in-part of Ser. No. 925,378, Jul. 17, 1978, abandoned, which is a division of Ser. No. 863,910, Dec. 23, 1977, Pat. No. 4,111,773, which is a continuation-in-part of Ser. No. 732,646, Oct. 15, 1976, Pat. No. 4,081,342, which is a continuation-in-part of Ser. No. 695,068, Jun. 11, 1976, Pat. No. 4,033,841, which is a continuation-in-part of Ser. No. 569,815, Apr. 21, 1975, Pat. No. 3,966,575, which is a continuation-in-part of Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898, which is a continuation-in-part of Ser. No. 383,255, Jul. 27, 1973, Pat. No. 3,849,275, which is a division of Ser. No. 263,605, Jun. 16, 1972, Pat. No. 3,795,605, which is a continuation-in-part of Ser. No. 53,402, Jul. 9, 1970, abandoned, which is a continuation-in-part of Ser. No. 25,938, Apr. 6, 1970, Pat. No. 3,687,834, which is a continuation-in-part of Ser. No. 864,851, Oct. 8, 1969, abandoned, which is a continuation-in-part of Ser. No. 811,421, Mar. 28, 1969, abandoned, said Ser. No. 569,815 is a continuation-in-part of Ser. No. 548,666, Feb. 10, 1975, Pat. No. 3,965,581, which is a continuation-in-part of Ser. No. 469,820, May 14, 1974, Pat. No. 3,931,682, Ser. No. 405,023, Oct. 10, 1973, Pat. No. 4,060,449, and Ser. No. 499,178, Aug. 21, 1974, Pat. No. 3,893,898. This application May 8, 1981, Ser. No. 261,784

The portion of the term of this patent subsequent to Nov. 19, 1991, has been disclaimed.

Int. Cl.[3] F26B *3/34;* B01D *57/02;* C25B *7/00*

U.S. Cl. 34—1 33 Claims



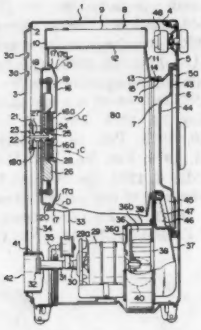
1. In a method for drying material by disposing said material in a heating means to have said heating means heat at least part of the liquid particles of said material, the improvement comprising the steps of disposing charged electrode means so as to be adjacent one side of said material when said material is disposed in said heating means and to define a plurality of alternately directed and oppositely charged electrostatic fields that are serially arranged with the positively charged portion of every other field at said electrode means being adjacent and between the negatively charged portions of the two fields adjacent thereto at said electrode means in a like repeating pattern and that are substantially constant and non-current consuming so that said fields at least partially extend through said material while said material is disposed in said heating means, and moving said material in one direction through said heating means to cause at least a portion of said material to have the particles of liquid thereof serially moved through an electrostatic field with its negatively charged portion disposed on said one side of said material and then into the next electrostatic field with its positively charged portion disposed on said one side of said material in a repetitive manner whereby said

particles of liquid of said portion of said material are subjected to an alternately directed pumping action by said serially arranged electrostatic fields while said portion of said material is being heated by said heating means and said material is being moved through said heating means in said one direction.

4,338,730
DRYER

Hisao Tatsumi, Nagoya, and Takashi Kawano, Seto, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 19, 1980, Ser. No. 179,564
Claims priority, application Japan, Aug. 23, 1979, 54-108332; Sep. 25, 1979, 54-132277[U]; Oct. 31, 1979, 54-141916; Nov. 22, 1979, 54-161983[U]
Int. Cl.³ F26B *21/12*
U.S. Cl. 34—54 **28 Claims**



1. A dryer comprising:
a housing;
a drying chamber formed in the housing for receiving wet clothing;
an electric heater;
means for directing hot air from the heater to the drying chamber to dry the clothing;
a ventilation fan which draws off air from the drying chamber and introduces the same amount of air into the drying chamber during a drying cycle, an amount of air ventilated by the ventilation fan set at greater than zero and less than 1 m^3/min per kilowatt of the heat-generating capacity of the electric heater while the electric heater is operated.

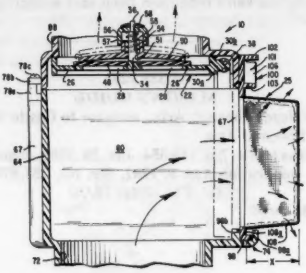
4,338,731
VENT FOR A CLOTHES DRYER

Sidney J. Shames, Briarcliff Manor, and Harold Shames, Ardsley, both of N.Y., assignors to Melard Manufacturing Corporation, Passaic, N.J.

Filed Sep. 22, 1980, Ser. No. 189,663
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—82 **25 Claims**

1. In an energy saving hot air vent which includes a selectively swingable, air-directing, valve adapted to direct hot air emitted from a clothes dryer either outdoors, when said valve is in a first position, or indoors when said valve is in a second position; said energy saving vent including housing means having an upstream hot air entry means adapted to receive thereinto hot air from a clothes dryer exhaust hose segment, a downstream hot air exit means adapted to direct hot air from said housing to another exhaust hose segment when said valve is in said first position, and indoor venting port defined in said housing means and adapted to receive hot air from said hot air entry means for discharge therethrough when said valve is in said second position; the improvement comprising, in combination:

said housing means being molded from a heat-resistant plastic, a slideway formed integrally on the exterior of said housing adjacent to but positioned outwardly of the indoor venting port, a frame for selective slidable entry in and removal from said slideway, and a screen secured

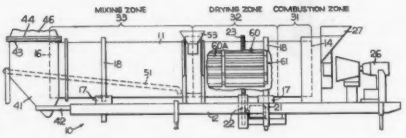


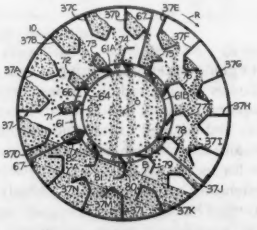
along its periphery to said frame and arranged for positioning across the direction of air flow from said indoor venting port for capturing lint and particulate matter carried by the heated air being discharged through said indoor venting port.

4,338,732
LIFTER CAGE FOR ASPHALT PLANT, DRYERS AND DRUM MIXERS

Major Coxhill, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 15, 1980, Ser. No. 217,534
Int. Cl.³ F26B *11/04*
U.S. Cl. 34—135 **4 Claims**





1. An asphalt plant having a rotatable hollow mixing drum provided with an aggregate inlet and asphalt concrete mix outlet, said mixing drum having an axis of rotation inclined downwards from said inlet to said outlet so the aggregate material entering said inlet of said rotating mixing drum forms a moving bed of material and including at least a drying zone through which the material traverses and hot exhaust gas enters, said mixing drum in the drying zone being provided with flights of spaced-apart, longitudinally extending drum lifters affixed to an inner surface of said drum which rotate with said mixing drum to effect a showering and veiling of the

aggregate material across the cross section of the mixing drum after said drum lifters have moved through the material bed carrying aggregate material in a rotational path of travel; the improvements comprising:

a lifter cage supported in coaxial relationship within the mixing drum in the drying zone for rotational movement with the mixing drum;

said lifter cage including a plurality of cage lifters disposed longitudinally within said mixing drums;

means for supporting said cage lifters in a spaced cylindrical array coaxial with said mixing drum for rotation therewith;

each of said cage lifters having in cross section a trough-like configuration opening toward said rotational path of travel with said trough-like configuration including a material retaining surface on a side of said cage lifter facing said axis of rotation;

said cage lifters including a plurality of sets including a first set wherein said cage lifters within said first set are supported with material retaining surfaces fixed at a common angle with respect to a radial line extending from said axis of rotation; and

said plurality of sets including at least a second set wherein said cage lifters within said second set are supported with material retaining surfaces fixed at a common angle with respect to a radial line extending from said axis of rotation said common angle of said second set being different from said common angle of said first set; said cage lifters within said plurality of sets are alternately arranged about said spaced cylindrical array;

whereby said cage lifters collect material during rotation with said first set of cage lifters spilling material therein over an arc of said path of travel different from an arc over which said second set of cage lifters spills material therein providing an increased uniformity of material spilling from said cage lifters through said path of travel.

4,338,733

SAFETY DEVICE FOR CRAMPONS, AND CRAMPONS EQUIPPED THEREWITH

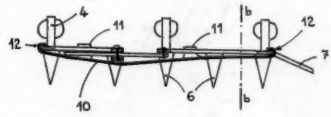
Jean-Paul Frechin, 215 Chemin de la Croix des Pecles, 74400 Chamonix, France

Filed May 13, 1980, Ser. No. 149,554

Claims priority, application France, May 14, 1979, 79/12382

Int. Cl.³ A43B *1/10, 3/10, 5/00*

U.S. Cl. 36—7.3 **12 Claims**



1. A safety device for fitting onto crampons such as those used by mountain climbers for traveling over snow-covered or ice-covered slopes, said device comprising; a sheet disposed a slight distance below the frame of the crampon, extending at least between the spikes on the crampon, forming a screen between the snow and the metal parts of said crampon for contacting the sole of the boot, said sheet being capable of elastically deforming or moving slightly in elastic fashion in all dimensions when a user walks.

4,338,734

UNIVERSAL ORTHOTIC

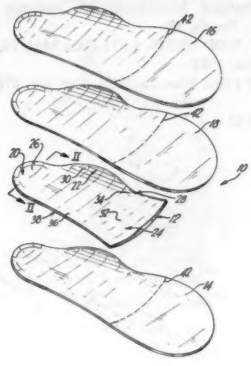
Richard B. Schwartz, Woodcliff Lake, N.J., assignor to Apex Foot Products Corp., Englewood, N.J.

Filed Feb. 22, 1980, Ser. No. 123,850

Int. Cl.³ A43B *13/38, 23/08*

U.S. Cl. 36—44 **14 Claims**

1. A universal orthotic, comprising a monolithic shell having a heel-to-ball length and being made from a semi-rigid material, said shell including a medial heel post, having an angle in a range of from about 3° to about 10°, a lower surface and an upper surface, a navicular flange, having a lower surface and an upper surface which flows directly into said upper surface of said heel post, and a matatarsal raise, having a lower surface



and an upper surface which flows directly into said upper surface of said navicular flange; first covering means for covering said upper surfaces of said heel post, navicular flange and metatarsal raise; and second covering means for covering said lower surfaces of said heel post, navicular flange and metatarsal raise.

4,338,735

DYNAMIC INTERNAL FITTING SYSTEM FOR A SPORT SHOE

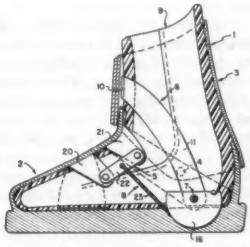
Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation of Ser. No. 104,283, Dec. 17, 1979, abandoned, which is a continuation-in-part of Ser. No. 50,436, Jun. 20, 1979, and a continuation-in-part of Ser. No. 886,946, Mar. 15, 1978.

This application Jun. 15, 1981, Ser. No. 274,031

Int. Cl.³ A43B *5/04*

U.S. Cl. 36—119 **13 Claims**



1. A sport shoe comprising:

a foot-engaging means for engaging a foot;

a leg-engaging means separate from said sport shoe for engaging the leg to which said foot is attached, said leg-engaging means extending from a first point above the ankle of said foot to a second point;

means for movably mounting said leg-engaging means in said sport shoe for movement of said leg-engaging means relative to said second point in response to a movement of said leg relative to said foot; and

means coupling said leg-engaging means and said foot-engaging means for tightening and loosening said foot-

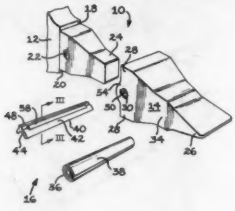
engaging means relative to said foot as said leg-engaging means is moved.

4,338,736

RETAINING PIN ASSEMBLY FOR EARTHWORKING TOOL

Michael T. Radigan, Manhattan, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00329, § 371 Date Mar. 16, 1981, § 102(e) Date Mar. 16, 1981
PCT Filed Mar. 16, 1981, Ser. No. 278,509
Int. Cl.³ E02F *9/28*
U.S. Cl. 37—142 A **10 Claims**



1. In an earthworking apparatus (10) having a tool supporting member (12) having shoulders (18,20) and an earthworking tool (14) having first and second end portions (26,28) and being releasably secured to said supporting member (12), said supporting member (12) and tool (14) each having a pin receiving opening (22,30) and being insertabie one within the other with the pin opening (22,30) of each being generally aligned in the installed position of the tool (14) and the supporting member (12), and a pin (36) insertable through said openings (22,30) and connecting the tool (14) to the supporting member (12), the improvement comprising:

said pin (36) having an outer surface (38) and being of a spring type configuration;

said pin openings (22,30) of the supporting member (12) and the tool (14) being non-coaxial in the installed position of the tool (14) and the supporting member (12) with said second end portion (28) of the tool (14) in contacting relationship with said shoulders (18,20) of the supporting member (12);

a sleeve (40) having first and second surfaces (42,44), each of arcuate configurations, said sleeve (40) being positioned in the openings (22,30) of the supporting member (12) and tool (14) with said first surface (42) in forceable contact with one of the tool (14) and supporting member (12), and said second surface (44) in forceable contact with the outer surface (38) of said spring pin (36) in the installed position of the tool (14) and the supporting member (12), with the pin (36) extending through the openings (22,30) with one side of the outer surface (38) of said pin (38) in forceable contact with one of the supporting member (12) and tool (14) and the opposed side of the outer surface (38) of said pin (36) in forceable contact with the sleeve (40); and

means (46) for maintaining said sleeve (40) against rotation about the pin (36).

4,338,737

SAFETY CLIP-ON ORNAMENTAL BADGE

Roger W. Lehmann, 3 Beverly Dr., Belle Mead, N.J. 08502

Filed Jan. 12, 1981, Ser. No. 224,307
Int. Cl.³ A44C *3/00*
U.S. Cl. 40—1.5 **3 Claims**

1. A clip-on badge, comprising:

(a) a badge

(b) clip-on means, and

(c) means for removably and adjustably attaching the clip-on means to the badge;

(d) said badge being provided with a buttonhole, and

(e) said clip-on means being provided with a button-shaped stud which is engageable with said buttonhole to attach the clip-on means to the badge;

(f) the badge being formed of a pair of front and back walls which are peripherally secured to each other to define an inner pocket between them,

(g) said buttonhole being formed in the back wall of said badge,

(h) a resilient filler being disposed in the inner pocket between the front and back walls, and

(i) the button-shaped stud being positioned between the back wall and the resilient filler,

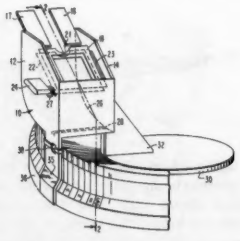
(j) whereby the button-shaped stud is frictionally secured in place between the resilient filler and the back wall by reason of the resilient pressure applied to it by the resilient filler.

4,338,738

SLIDE PREVIEWER AND TRAY LOADER

Owen L. Lamb, 662 W. Sunnyoaks Ave., Campbell, Calif. 95008

Filed Jan. 10, 1980, Ser. No. 110,804
Int. Cl.³ G09F *11/30*
U.S. Cl. 40—509 **9 Claims**



1. A slide-handling mechanism comprising:

means for holding a slide;

means for moving said holding means in the vertical plane from a first position to a vertical position;

means for restraining said slide in said holding means, including means for allowing said slide to drop from said holding means when said holding means is in said vertical position; and,

means for registering said slide-handling mechanism above a slide compartment of a slide tray, such that a slide in said holding means is allowed to drop into said compartment when said holding means is in said vertical position.

4,338,739

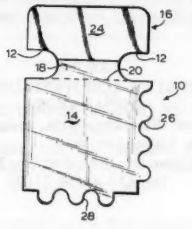
SHELF SIGN DEVICE HAVING SINUATED EDGES

William Greenberger, White Plains, N.Y., assignor to The Hopp Press, New York, N.Y.

Continuation-in-part of Ser. No. 134,432, Mar. 27, 1980, abandoned. This application Feb. 23, 1981, Ser. No. 236,977

Int. Cl.[3] G09F 7/00

U.S. Cl. 40—584 8 Claims



1. A display device for use in conjunction with a shelf molding, comprising: a substantially rectangular, planar resilient body including a first body portion of substantially square configuration, a second body portion, and a neck portion of reduced width integrally connecting said first body portion and said second body portion, said first body portion including a first sinuated edge.

4,338,740

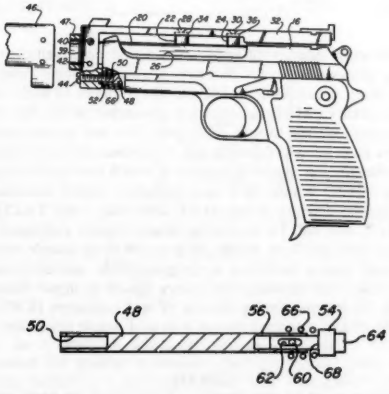
PISTOL SIGHT BASE BRIDGE

Fred R. Miller, 2620 E. 32nd St., Davenport, Iowa 52807

Filed Sep. 2, 1980, Ser. No. 182,908

Int. Cl.[3] F41G 1/02

U.S. Cl. 42—1 SR 8 Claims



1. In combination with a pistol having a slide and barrel having relative movement therebetween.

said barrel having a bridge thereon,

said slide having a cartridge ejection port thereon,

said bridge being attached to said barrel through said ejection port to avoid slide contact with said bridge when relative movement occurs, and

sight means on said bridge, said bridge having a relief cut in its underneath surface to ride over the front sight of said pistol on said slide.

4,338,741

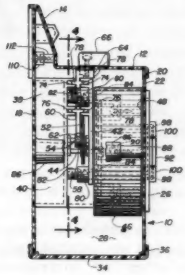
TOY DRYER

Kwok W. Tsui, and Sing C. J. Yuen, both of Hong Kong, Hong Kong, assignors to Arco Industries Ltd., Hong Kong, Hong Kong

Filed Apr. 9, 1981, Ser. No. 252,311

Int. Cl.[3] A63H 3/52

U.S. Cl. 46—14 7 Claims



1. A toy dryer comprising in combination, a generally rectangular cabinet having a top, bottom, sides, back and also a vertical front wall provided with an opening, all of which are molded from plastic material and connected to form said cabinet, a cup-shaped drum open at one end and supported within the cabinet for unidirectional rotation about a horizontal axis with the open end immediately adjacent said opening and occupying the forward portion of said cabinet, an actuating slide movable within a vertical plane in said cabinet in successive driving and return directions and having a toothed rack along one edge and a projection extending through a slot in said top of the cabinet terminating in a knob, a pair of transversely spaced vertical interior frame members in said cabinet rearwardly of said drum therein and respectively having coaxial horizontal bearings and spaced parallel pairs of facing guide grooves, a drive shaft for said drum supported by said bearings and fixed at one end to said drum, a gear train in said cabinet supported upon shafts mounted in bearings in said frame members and including a driven gear fixed to said drive shaft and engaged by said rack for operation of said gear train to actuate said driven gear to rotate said drum when said rack member is moved in said driving direction, means operable to permit movement of said actuating slide in return direction without interfering with the unidirectional rotation of said drum, and means on one of said frame members connected to the back of said cabinet for support of said gear train and slide.

4,338,742

ARMADILLO TOY

John E. Outtrim, I-10 at Magnolia, Channelview, Tex. 77530, and Michael P. Stagner, 12738 La Grove La., Houston, Tex. 77015

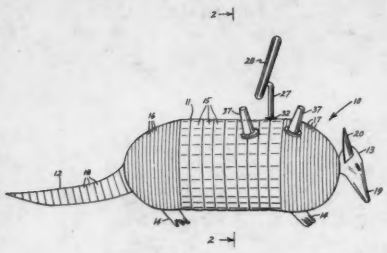
Filed Jul. 23, 1981, Ser. No. 285,965

Int. Cl.[3] A63H 33/26

U.S. Cl. 46—227 3 Claims

1. Toy, comprising, in combination, a unitary body having the outward form of an armadillo, including a body portion, a tail portion, a head portion, and leg and feet portions, said body portion having a cavity therewithin and having an opening thereinto at the bottom side of said body portion, battery means, electric motor means, capacitor means, buzzer means, flasher oscillator means, plural lamp means, and switch means connected in series in a loop circuit, said electric motor means having a rotating shaft carrying a bevel gear, simulated antenna means mounted at the outer end of a shaft rotatably disposed through the wall of said body portion and having a bevel gear carried on its inner end within said cavity and

engaged with said first-named bevel gear, said lamp means being disposed in equally spaced circular dispositions about said antenna shaft, said switch means being accessible from the exterior of said body portion, whereby said switch means may



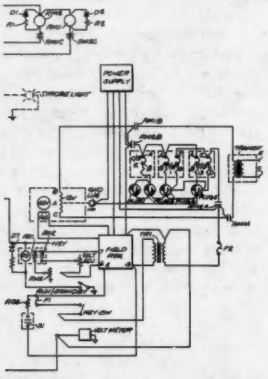
be turned "on" to cause simultaneous sounding of said buzzer means, rotations of said simulated antenna and flashing of said lamps and may be turned "off" to terminate said buzzer sounding, simulated antenna rotation, and flashing of said lamps.

4,338,743

SAFETY SYSTEM FOR WEED DESTROYING APPARATUS OPERABLE TO ALTERNATIVELY SUPPLY AUXILIARY POWER

Thomas P. Gilmore, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 16, 1981, Ser. No. 243,839
Int. Cl.³ A01M *21/00*
U.S. Cl. 47—1.3 **8 Claims**



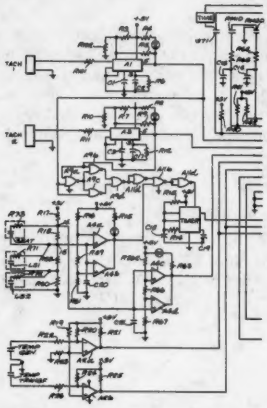
1. Weed destroying apparatus carried on a vehicle and having electrodes (E) for contacting and killing weeds when in a weed killing mode and electrical outlets (PLUG 1–PLUG 4) for supplying electrical power to auxiliary apparatus when in a standby mode comprising, in combination, a generator (GEN), a step-up transformer (TRANSF) having its secondary winding coupled to said electrodes (E), a programmable semiconductor logic array (A5) adapted to provide binary voltages on a plurality of its outputs as a function of the program entered therein and the binary instruction signals received on a plurality of its inputs, first contactor means (R1, RM1) coupled to a first output (F3) of said logic array (A5) for connecting said generator (GEN) to the primary winding of said transformer (TRANSF) to thereby place said apparatus in said weed killing mode, second contactor means (R2, RM2) coupled to a second output (F4) of said logic array for connecting said generator (GEN) to said electrical outlets to thereby place said apparatus in said standby mode, first and second safety systems each of which has interlock means for preventing an unsafe condition in which high voltage from said generator (GEN) and said transformer (TRANSF) would be a hazard in said weed killing mode and sensor means (A4*c*, A4*d*; A1, A3) for providing binary signals to inputs (I4, I5, I6) of said logic array (A5) indicative of whether said interlock means is in a safe or said unsafe condition, and switch means (RUN/STANDBY, R0) for selectively applying binary signals to an input (I8) to said logic array (A5) indicative of whether said apparatus is to operate in said weed killing mode or in said standby mode.

4,338,744

SAFETY SYSTEM FOR WEED DESTROYING APPARATUS

Thomas P. Gilmore, Wauwatosa, Wis., assignor to Allis-Chalmers Co ration, Milwaukee, Wis.

Filed Mar. 16, 1981, Ser. No. 243,841
Int. Cl.³ A01M *21/00*
U.S. Cl. 47—1.3 **29 Claims**



1. In weed destroying apparatus carried on a vehicle and having electrodes (E) for contacting weeds adjacent rows of crops along which said vehicle travels, a source of high voltage electricity (GEN), an electrical contactor (RM1) for connecting said source to said electrodes, first and second safety systems each of which comprises redundant interlock means for preventing an unsafe condition in which said high voltage source (GEN) would be a hazard, sensor means associated with each said safety system (LS1, LS2, A4*c*, A4*d*; TACH 1, TACH 2, A1, A3) for providing binary signals indicative of whether said interlock means are in a safe or an unsafe condition, and means including a programmable semiconductor logic array (A5) receiving said binary signals on inputs thereof (I4, I5, I6) for preventing closure of said contactor (RM1) if any one of said interlock means is in said unsafe condition.

4,338,745

PROCESS FOR MASS PROPAGATION OF PLANTLETS

Masanaru Misawa, Tama; Shinsaku Takayama, Machida; Yoshiki Takashige, and Hiroshi Tsumori, both of Hofu, all of Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1980, Ser. No. 127,276
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **4 Claims**

1. A process for mass propagation of a morphologically normal bulb of a plant selected from the group consisting of Liliaceae, Amaryllidaceae and Iridaceae, which process comprises cultivating a piece of morphologically normal bulb of

the said plant in a first medium selected from an agar medium and a liquid medium under sterilized conditions to give at least two bulblets differentiated from the said bulb piece, removing the bulbscales from the said bulblets, cultivating said scale in a second medium selected from an agar medium and a liquid medium with shaking under sterilized conditions to give at least one aggregate per one scale, removing new bulbscales from the said aggregate, cultivating the said new bulbscales in a liquid medium under sterilized conditions to obtain a new bulblet per one new scale, and cultivating the said new bulbet in a fourth medium selected from an agar medium and a liquid medium under sterilized conditions to obtain a morphologically normal bulb.

4,338,746

ENHANCEMENT OF FLOWERING BY FLOWERING TREES

Lewis H. Sarett, Rolling Hill Rd., Skillman, N.J. 08558

Filed Feb. 17, 1981, Ser. No. 234,743

Int. Cl.³ A01G *1/00*

U.S. Cl. 47—58 **5 Claims**

1. A process for enhancing the flowering of flowering trees and reducing the foliage growth thereof during a predetermined flowering season which comprises penetrating the cambium of said trees with a metallic copper object at a point in time subsequent to the flowering thereof in the season previous to said predetermined season but prior to the setting of the fruiting wood during said previous flowering season and leaving said copper object in place until at least after said setting time.

4,338,747

LIFTING MECHANISM FOR A MOTORCAR WINDOW

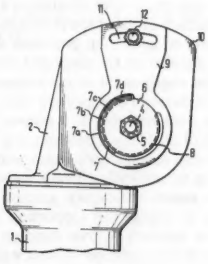
Peter Hess, Coburg, and Hans Rampel, Eicha, both of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH and Company, Coburg, Fed. Rep. of Germany

Continuation of Ser. No. 849,668, Nov. 8, 1977, abandoned. This application Oct. 22, 1979, Ser. No. 87,305

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1976, 2652076

Int. Cl.³ E05F *15/08*

U.S. Cl. 49—349 **7 Claims**



1. In a window drive mechanism including a window mounted for guided movement through a fixed path, drive means including a rotating output shaft, transmission means coupled to transmit a driving force from said drive means to said window, and limit means for limiting the rotative range of said output shaft in order to limit the driven range of said window, the improvement wherein said limit means comprise: stop means including a first and a second abutment spaced apart a predetermined distance; a driven member attached in driving engagement with said output shaft; means operatively associated with said driven member for bringing said driven member into motion-limiting engagement with said first abutment when said output shaft rotates in a first direction and into motion-limiting engagement with said second abutment when said output shaft rotates in a second direction opposite to said first direction; said driven member, said operatively associated means and said stop means being arranged such that said output shaft must rotate through a rotative range greater than 360° in order for said driven member to be brought from motion-limiting engagement with one of said first and said second abutments into motion-limiting engagement with the other of said first and said second abutments; said stop means comprising a pair of plates both mounted for adjustable rotative movement about a common axis, each of said plates having formed therein an arcuate slot formed to coincide with the circumference of a circle having said common axis as its center, said slots being located to extend in overlapping juxtaposition with one end of one of said slots being adapted to define said first fixed abutment and with the opposed end of the other of said slots being adapted to define said second fixed abutment, said pair of plates being rotatively adjustable relative to each other to enable adjustment of the relative distance between said first and said second abutments thereby to effect adjustment of the rotative range of said output shaft, said operatively associated means including a part in driven engagement with said driven member and extending into both said slots for abutting engagement, respectively, with said first and said second fixed abutments.

4,338,748

GRINDING TOOL METAL MACHINING

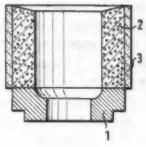
Karl Elbel, Pforzheim, Fed. Rep. of Germany, assignor to Firma Heinrich Lippert GmbH, Pforzheim, Fed. Rep. of Germany

Filed Jun. 16, 1980, Ser. No. 159,697

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1979, 7918301[U]; Aug. 4, 1979, 2931695

Int. Cl.³ B24B *5/00*

U.S. Cl. 51—206 R **14 Claims**



1. In a grinding tool for the machining of metal which is provided with matrix-bonded abrasive grains, the hardness of the matrix varying over the grinding area, along which the workpiece moves in a single operation, in the travel direction of the workpiece relative to the grinding tool, the grinding area consists initially of a rough-grinding area with a hard matrix and subsequently of a fine-grinding area which is fixedly connected to the rough-grinding area, the improvement comprising said fine-grinding area comprising a flexible matrix consisting of a textile material which is more flexible than the material of a hard matrix and has an open structure, the strength of the fine-grinding area relative to that of the rough-grinding area being so dimensioned that, with the workpiece abutting over the entire grinding area, at the outside portion of the fine-grinding area, that proportion of the entire grinding pressure is absorbed in the fine-grinding area that corresponds to the proportion of its contact surface with respect to the workpiece.

4,338,749

TOOLHOLDER

Robert E. Kiser, 58770 Rd. 601, Ahwahnee, Calif. 93601

Filed Jul. 21, 1980, Ser. No. 170,915

Int. Cl.³ B24B *3/34*

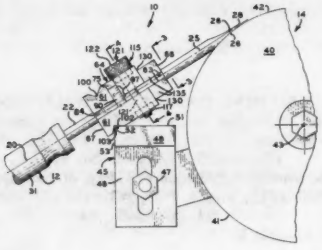
U.S. Cl. 51—220 **7 Claims**

1. A toolholder for use with a tool shaping device having a

planar guiding surface and with a tool having a pair of opposite sides which are individually shaped by linear movement of the tool in a direction parallel to the surface, the holder comprising:

A. a body having a pair of juxtaposed blocks adapted to receive the tool therebetween and individually bearing a pair of faces disposed oppositely of the body and individually corresponding to the sides of the tool, each face having a planar guided surface adapted to engage flatly the guiding surface of the shaping device for guidance of the body in sliding movement in said direction, and having a pair of portions disposed so as to be spaced in said direction when the guided surface of the blade is engaged with the guided surface for such guidance;

B. means for clamping the tool in the body centrally between the faces so that one side of the tool is shaped by the device when one of the guided surfaces engages the guiding surface and the other side of the tool is shaped by the device when the other of the guided surfaces engages the guiding surface, the clamping means including a pair of



spaced, screwthreaded elements, each element individually connecting one portion of one block with the portion of the other block corresponding to said one portion along said direction when the guided surface of the blade is engaged with the guided surface for such guidance, so that rotation of the element in a predetermined direction urges the pair of portions associated therewith toward each other and so that selective rotation of the screwthreaded elements in said direction of rotation adjusts the guided surfaces precisely into normal relation to a plane of reference which is normal to said direction; and

C. means for indicating the relative spacing of the pair of portions of the blocks associated with one of the screw-threaded elements and means for indicating the relative spacing of the pair of portions of the blocks associated with the other of the screw-threaded elements, each indicating means indicating the relative spacing of the pair of portions associated with the screw-threaded element of said means when the guided surfaces are disposed precisely in said normal relation.

4,338,750

METHOD FOR APPLYING ORGANOPOLYSILOXANE FLUIDS TO GRINDING WHEELS CONTAINING CUBIC BORON NITRIDE ABRASIVES

Ernest Ratterman, Worthington, Ohio, assignor to General Electric Company, Waterford, N.Y.

Filed Oct. 28, 1980, Ser. No. 201,652
Int. Cl.³ B24B *1/00*
U.S. Cl. 51—281 R **5 Claims**

1. A method of enhancing the performance of grinding wheels containing a cubic boron nitride abrasive comprising applying to the point of contact between the cubic boron nitride wheel and a workpiece, an organopolysiloxane fluid having a viscosity of about 20 centistokes to about 200 centistokes at 25° C., and an average formula:

$$R_nSiO_{4-n/2}$$

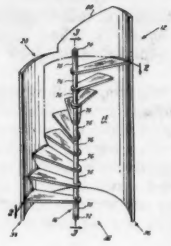
where R represents alkyl radicals having from one to 22 carbon atoms, cycloalkyl radicals having from 5 to 7 carbon atoms in the ring, mononuclear and binuclear aryl radicals, mononuclear aryl lower alkyl radicals, lower alkenyl radicals having from 2 to 8 carbon atoms and halogenated derivatives of the above radicals and n has a value of from 2.002 to 3.0.

4,338,751

KNOCKDOWN SPIRAL STAIRWAY

Forest E. Sanders, 210 Pershing St., Green City, Mo. 63545

Filed Jul. 30, 1980, Ser. No. 173,458
Int. Cl.³ E04F *11/00*
U.S. Cl. 52—187 **4 Claims**



1. A spiral stairway construction, comprising:

an arcuate wall having a top end, a bottom end and defining first and second spaced wall edges each having an upper and lower end,

said wall being vertically disposed with said bottom end adapted to rest on a supporting surface,

said wall being provided with a plurality of slots that are vertically spaced and angularly offset from a predetermined point near the lower end of said first wall edge to a predetermined point near the upper end of said second wall edge to define a helical path,

a plurality of individual steps each having a proximal end from which respective sides diverge to a distal end forming a tread surface of usual spiral stairstep design,

the proximal end of each step provided with a mounting hole, a hook member on the distal end of each step affording removable engagement of each respective distal end with said wall through a respective slot,

with said distal ends engaged in a respective wall slot the proximal end of each step extending to a point intermediate said first and second wall edges with said mounting holes disposed in vertically aligned registration,

a post support means removably journalled through said aligned holes to engage the supporting surface whereby the assembled stairway is free standing with said steps effectively locked in position to said wall and cannot be displaced without removal of said post support means, and

means on said post support means for effectively spacing adjacent steps.

4,338,752

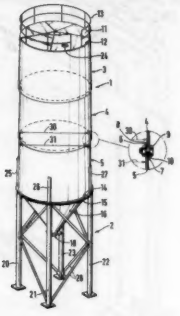
COLLAPSIBLE SILO

Karl-Heinz Stanelle, Rosenstr. 4, D-7129 Güglingen, Fed. Rep. of Germany

Filed Dec. 28, 1979, Ser. No. 108,174
Claims priority, application Luxembourg, Jan. 2, 1979, 80749; Fed. Rep. of Germany, Dec. 7, 1979, 2949313
Int. Cl.³ E04H *7/00*
U.S. Cl. 52—194 **5 Claims**

1. A storage arrangement, particularly a silo, comprising a plurality of superimposed tubular sections having telescopically interfitted ends and including an uppermost and a lower-

most section, said lowermost section being dimensioned to receive the remainder of said sections internally thereof for transport and having a lower end provided with an outwardly extending first flange; a hopper below said lowermost section having an upper end portion provided with an outwardly extending second flange disposed adjacent said first flange and



supporting the same, said hopper being dimensioned so as to be receivable in the smallest of said sections substantially in its entirety with said flange abutting said first flange when said hopper is inverted and inserted into said sections for transport, and said flanges having alignable openings adapted to be connected with one another both in the upright and inverted positions of said hopper.

4,338,753

ARRANGEMENT FOR CONNECTING TWO PROFILE MEMBERS, PARTICULARLY CHANNEL MEMBERS FOR METAL WINDOWS

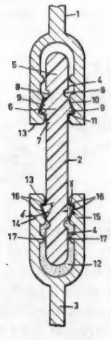
Bernhard Janke, Bindlach, Fed. Rep. of Germany, assignor to Hef Technische Entwicklung GmbH & Co. KG, Dusseldorf, Fed. Rep. of Germany

Filed May 16, 1980, Ser. No. 150,667

Claims priority, application Fed. Rep. of Germany, May 14, 1979, 7914521[U]

Int. Cl.[3] **E04B** *1/62, 1/343;* **G09F** *15/00*

U.S. Cl. 52—309.13 **7 Claims**



1. An arrangement for joining window frame members and the like, comprising a pair of frame strip members having in cross section a U-shaped receptor each of the arms of which having laterally inwardly directed projections, a connecting strip having in cross section a central portion and a catch lug at each end for entry within the receptor of an associated frame strip member, said catch lug being provided with outwardly directed projections on each of its lateral sides for cooperation with the inner edge of laterally inwardly directed projections of the associated receptor, a head portion, and a recess on each of its lateral sides between said outwardly directed projection and the head portion, said catch lug having a height less than the depth of said receptor, the cavity defined by said receptor and catch lug being adapted to receive a hardenable filler material whereby said strip frame members and said connecting strips are held securely.

4,338,754

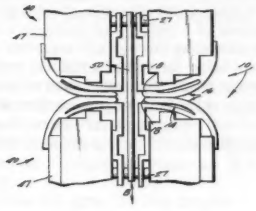
PANELLING EDGING

David C. Woods, Quakertown, Pa., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed May 27, 1980, Ser. No. 153,132

Int. Cl.[3] **E04B** *1/38*

U.S. Cl. 52—393 **8 Claims**



1. A room dividing panel comprising

a body portion, said body portion including an edge elongated in a first dimension with means defining a channel in said edge extending in a second dimension perpendicular to said first dimension and extending along said edge in said first dimension;

an edge structure for cooperating with said edge to provide a light-tight engagement between said edge and a cooperating edge of an adjacent panel, said edge structure comprising a unitary extrusion, elongated in said first dimension, of flexible material and comprising: a hollow anchoring portion elongated in said second dimension and disposed within said panel edge channel; a pair of support portions extending outwardly from and on opposite sides of said anchoring portion, and engaging and overlapping said panel edge; a pair of flexible lips, each lip having one end thereof integral with a said support portion at a section thereof remote from said anchoring portion and extending toward the other of said support portions and terminating in a free end unconnected to any other structures; and wherein the free ends of said lips are spaced from each other in a third dimension perpendicular to both said first and second dimensions, and are spaced from said support portions in said second dimension; and wherein said hollow anchoring portion is open along said panel edge; and

at least one panel interlocking hardware pin disposed and held in said channel, extending in said third dimension, and supported at least in part by said extrusion hollow anchoring portion.

4,338,755

FASTENER ASSEMBLY

S. Tebbs Chichester, Jr., 2529 P St. NW., Washington, D.C. 20007

Continuation-in-part of Ser. No. 45,872, Jun., 1979, abandoned. This application Apr. 10, 1980, Ser. No. 138,924

Int. Cl.[3] **E04B** *5/52;* **F16B** *35/00*

U.S. Cl. 52—484 **16 Claims**

5. The combination of ceiling panels and fastener assemblies for supporting said panels from a supporting structure comprising;

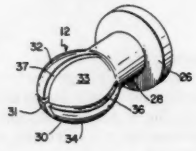
(a) supporting members suspended from or attached to said

supporting structure, said supporting members being formed with at least one opening;

(b) a plurality of ceiling panels each of which is formed at a corner thereof with an opening therethrough, with said openings when said panels are juxtaposed defining a generally cylindrical opening, said panels being further formed at each corner with a relatively enlarged recess, with said recesses when said panels are juxtaposed forming a generally circular recess concentric with said openings, and

(c) fastener assemblies for removably mounting said panels to said supporting members, each of said fastener assemblies comprising

(i) a female nut member having a relatively enlarged head portion adapted to abut a supporting member having at least one opening therethrough, an intermediate section having an outside diameter slightly less than the diameter of said opening in said supporting member so as to be able to extend therethrough, and a leading end section comprised of a plurality of segments separated by slot means extending through said segments, said female nut member being formed of a resilient material, with the dimension of said segments, when uncompressed, being greater in at least certain regions thereof than the diameter of said opening in said supporting member, the construction of said leading end section being such that



said segments are compressed when said leading end is inserted through said opening in said supporting member, with said segments thereafter expanding away from each other to said greater dimension so as to temporarily and removably retain said nut member in said opening; a central opening extending through said head portion and said intermediate section of said nut and terminating short of said leading end section, said central opening being threaded along at least a portion of its length, and

(ii) a male spring bolt comprising a bolt head and a flexible tightly wound helically coiled spring secured at one end in a recess provided therefor in said bolt head, the diameter and pitch of the coils of said spring corresponding to the diameter and pitch of the threads of said central opening thereby to permit threaded engagement of said coiled spring in said central opening, the threaded penetration of said coiled spring normally being such as to leave an outwardly exposed portion of said coiled spring so as to provide space between said bolt head and said supporting member to receive a thickness of said panels therebetween, the flexibility of said spring permitting movement of the exposed portion of said spring in any direction to facilitate removal of said panels or replacement of said panels with other panels.

4,338,756

PANEL AND INSULATION SYSTEM

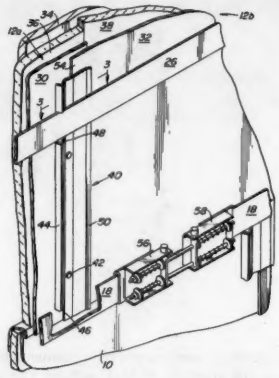
Charles J. Crothers, Cherry Hill, N.J., assignor to Thermacon Industries, Inc., Moorestown, N.J.

Filed Jun. 12, 1980, Ser. No. 158,666

Int. Cl.³ E04G *11/04;* E04B *2/18, 1/68*

U.S. Cl. 52—539 **9 Claims**

1. A panel for use in an insulation system, said panel having a top edge and a bottom edge interconnected by first and second side edges, insulation secured to a rear surface of a facing layer of the panel in a manner so that the insulation is spaced from the bottom edge and from said first edge, means including a reinforcement member secured to said facing layer adjacent to but spaced from the second side edge of the panel



for clamping an edge on a similarly constructed panel, said reinforcement member having a portion terminating at an edge in a flange angled outwardly from the facing layer, said portion overlying said facing layer and being arranged therewith to clamp a portion of a similarly constructed panel inserted between.

4,338,757

DEVICE FOR CONNECTING A STRUCTURE WITH A WALL TO BE POURED WITH CONCRETE

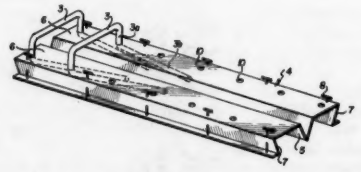
Heinz Witschi, Eigerweg 14, 3073 Gümligen, Berne, and Peter Fankhauser, Sonnrainstrasse 13, 3510 Konolfingen, Berne, both of Switzerland

Filed Apr. 16, 1980, Ser. No. 140,782

Claims priority, application Switzerland, May 1, 1979, 4073/79

Int. Cl.³ E04B *1/38*

U.S. Cl. 52—699 **15 Claims**



1. A device for connecting a structure, such as a partition, a staircase or a false floor, with a wall to be poured with concrete in a planking, said device comprising at least one profile element having two side walls with laterally projecting flanges and at least one bottom connected with said two side walls to form a channel-shaped strip, at least one anchoring steel rod extended through said bottom in such a way that its first portion to be concreted lies on one side of said profile element, and its second portion, bent in right angles from the first portion, lies on the other side of said profile element resting against the bottom surface of the profile element confined by said side walls, said profile element being fitted to the inside wall of the planking in such a way as to rest with its side walls on the planking in order to create a cavity between said bottom and said planking, wherein the profile element comprises a mallea-

ble sheet the surface of which is roughened and each side wall of which encloses an acute angle with the bottom.

4,338,758

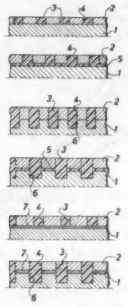
VIBRATION DAMPED STRUCTURES AND OBJECTS

Gunnar Hagbjer, Malmö, Sweden, assignor to Reduc Acoustics AB, Sundyberg, Sweden

Continuation of Ser. No. 897,306, Apr. 18, 1978, abandoned. This application Apr. 25, 1980, Ser. No. 143,668

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—742 **13 Claims**



13. Vibration damping apparatus formed by a process comprising arranging a rigid structure to bear upon a structure subject to vibration such that the rigid structure participates in vibrational oscillations of the structure subject to vibration, forming a plurality of bores in said rigid structure extending to at least a border surface between said rigid structure and the structure subject to vibration, applying fluid viscoelastic damping material in said bores, and hardening the damping material to cause adherence between the material and the walls of the bores.

4,338,759

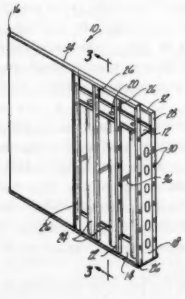
METHOD OF BUILDING CONSTRUCTION USING CONCRETE REINFORCED WALL MODULES

Albert Swerdlow, Oak Park, and George Szegedy, Dearborn Heights, both of Mich., assignors to Universal Component Systems, Inc., Detroit, Mich.

Filed Jul. 28, 1980, Ser. No. 172,576

Int. Cl.³ E04B *2/68*

U.S. Cl. 52—743 **9 Claims**



1. A method of constructing a multi-story, cast-in-place concrete building without the need for super-structure supports, comprising the steps of:

(A) forming a first plurality of wall modules each adapted to receive structurally supporting concrete therein by

(1) connecting the opposite extremities of each of a plurality of elongate, concrete receptacles to a pair of spaced apart, generally parallel horizontal support members respectively,

(2) connecting the opposite extremities of each of a plurality of elongate, vertical support members to said horizontal support members respectively at spaced intervals along said horizontal support members,

(3) forming a U-shaped channel along one of said horizontal support members;

(B) erecting said first plurality of wall modules to form a wall defining a first story of said building;

(C) placing a floor on said wall;

(D) supporting said floor using said vertical support members; and

(E) then, following step (D), forming a plurality of structurally supporting vertical and horizontal concrete beams substantially simultaneously in said wall by introducing flowable uncured concrete into said receptacles and said channels of said first plurality of wall modules.

4,338,760

CARRIER PACK FOR A NUMBER OF BOTTLES AS WELL AS THE PROCESS AND APPARATUS NEEDED TO CLOSE THE PACK

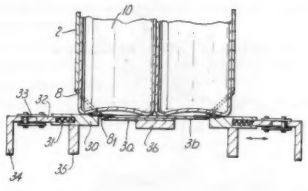
Werner Kuhn, Buchenberg, Fed. Rep. of Germany, assignor to International Actrooi Maatschappy "Octropa" B.V., Rotterdam, Netherlands

Filed Nov. 25, 1980, Ser. No. 210,160

Claims priority, application Fed. Rep. of Germany, Dec. 3, 1979, 2948598

Int. Cl.³ B65B *21/24*

U.S. Cl. 53—48 **3 Claims**



1. Apparatus for closing a carrier package for bottles or similar articles by surrounding the articles with a package blank, the package blank having an elongated first end for forming a first side and part of a second side of the package to be formed, the end being divided into a plurality of tabs by a plurality of slits each extending generally transverse to the direction of elongation of the end, and extending in both the part of the end forming a first side and forming part of a second side, and the blank having a second end opposite the first end, the package blank second end comprising an elongated end parallel to the first elongated end and for forming a third side and part of the second side of the package to be formed, the second end being divided into a plurality of tabs by a plurality of slits each extending generally transverse to the direction of elongation of the end, and extending in both the part of the end forming the third side and forming part of the second side; the apparatus comprising:

transport means for transporting the objects to be packaged, package blanks, and resulting filled packages;

folding means associated with the transport means for folding the blank around the objects; and

closing means for pushing opposite ends of the blanks toward each around the objects so that the blank tightly engages the objects even when objects of differing diameter or cross-sectional area are packaged together, said closing means comprising: a plurality of fingers mounted in operative association with said elongated package blank first end as said package blank and objects are being trans-

ported by said transport means; each of said fingers having an operative width no greater than the length of a tab of the package blank first end in the dimension of elongation thereof; and further comprising spring biasing means for biasing each of said fingers individually inwardly with respect to the package blank so that each of said fingers engages a tab and pushes that tab only toward the package blank second end so that the package tightly engages the objects being packaged; and

a plurality of fingers disposed in operative association with the package second end, each of said fingers having an operative width no greater than the length of a tab of the package blank second end; and spring biasing means for biasing each of said fingers individually inwardly with respect to the package blank so that each of said fingers engages a tab and pushes that tab toward the package blank first end so that the package tightly engages the objects being packaged.

4,338,761

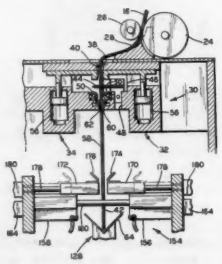
MACHINE FOR PRODUCING PACKAGES WITH LABELS

Larry C. Gess, 9270 Secor Rd., Temperance, Mich. 48182

Continuation-in-part of Ser. No. 24,965, Mar. 29, 1979, Pat. No. 4,244,159. This application Jan. 12, 1981, Ser. No. 224,639

Int. Cl.[3] **B65B** *61/00, 61/26*

U.S. Cl. 53—137 **14 Claims**



1. A machine for making labeled packages from a length of flexible tubing and a strip of labels, said machine comprising means for advancing the tubing lengthwise along a path and for stopping the advance, first sealing means along the path forming a first transverse sealed strip across the tubing, means along the path beyond said first sealing means for severing the tubing near the sealed strip and forming a severed section, means along the path beyond said first sealing means and beyond said severing means for holding the severed edges of the severed section to open and close the severed section, second sealing means along the path beyond said holding means for forming a second transverse sealed strip near the severed edges, means for feeding the strip of labels along a path, means for severing a label from the strip, a first block having a generally V-shaped recess, a second block having a generally V-shaped projection, means for moving said second block transversely of the label path into and out of said recess of said first block, moving means for moving said first block with said V-shaped recess between a position adjacent said severing means and a position in which the label carried thereby is over the edge of the severed section, and third sealing means along the tubing path beyond said second sealing means for affixing the label to the severed section near the first transverse sealed strip.

4,338,762

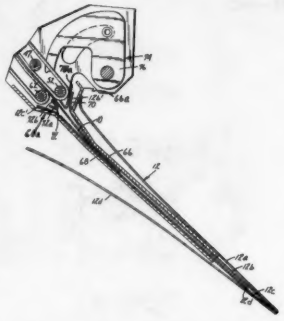
PHOTOGRAPHIC FILM INSERTION APPARATUS

Patrick J. Gilligan, Bloomington, and Ted G. Merry, Lindstrom, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed May 5, 1980, Ser. No. 146,507

Int. Cl.[3] **B65B** *63/02, 39/00*

U.S. Cl. 53—244 **12 Claims**



1. A photographic film inserting apparatus for inserting photographic film segments into an insertion opening of a multi-layer package strip and stacking the film segments into a film stack between a pair of the layers of the package strip, the apparatus comprising:

means for separating layers of the package strip to form a film insertion opening at a film inserting and stacking station;

film conveyor means for conveying cut photographic film segments along a film path into the film insertion opening; and

means for driving any film segment not fully inserted into the multi-layer package strip a further distance into the insertion opening after the film conveyor means has completed conveying the film segments onto the film stack, by engaging a trailing edge of any film segment not fully inserted into the multi-layer package strip, the further distance being sufficient to avoid interference between the film conveyor means and the trailing edges of the stacked film segments as the multi-layer package strip with inserted stacked film segments is advanced away from the film inserting and stacking station, said means for driving comprising:

pusher means for pushing the trailing edge of any film segment not fully inserted into the multi-layer package strip, the pusher means being rotatable angularly from a normal position out of the film path to a position in which the pusher means pushes the trailing edge and having a trailing edge engaging surface sufficiently large to compensate for variations in the position of the trailing edge;

actuator means for rotating the pusher means to cause the pusher means to push the trailing edge; wherein the actuator means is actuated after all the film segments of a customer order have been conveyed by the film conveyor means and stacked in the film stack, and before the package strip and the stacked film segments are advanced away from the film inserting and stacking station.

4,338,763

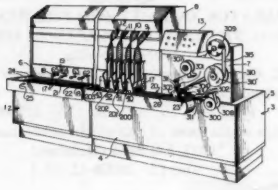
COMPONENT SEQUENCING METHOD

Philip A. Ragard, Binghamton, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Continuation of Ser. No. 105,267, Dec. 19, 1979, abandoned, which is a division of Ser. No. 935,619, Aug. 21, 1978, Pat. No. 4,213,286. This application May 18, 1981, Ser. No. 264,956

Int. Cl.[3] **B65B** *27/10, 57/10*

U.S. Cl. 53—399 **1 Claim**



1. A method of maintaining or increasing the component volume output of a sequencing machine for axial lead electronic components while preventing the bending of the leads of said components, said machine comprising dispensers equally spaced apart a spacing distance and having a cycling rate for selectively dropping said components onto a continuously moving conveyor in a preferred sequence, said conveyor moving at a first velocity past said dispensers and being adapted to receive said components so that they are equally spaced a first pitch distance apart at the output of said machine, said method comprising the steps of:

(a) providing plural opposed pairs of "V"-type notches in said conveyor for receiving said axial leads;

(b) equally spacing each opposed pair from the adjacent opposed pairs by a second pitch distance which is equal to a submultiple of said spacing distance;

(c) decreasing the velocity of said conveyor from said first velocity to a second velocity which is less than said first velocity and greater than or equal to the product of said first velocity multiplied by the ratio of said first pitch distance to said second pitch distance;

(d) increasing said cycling rate to that necessary for dropping a component into each adjacent "V"-type notch by the same dispenser; and

(e) dispensing each of said components from selected ones of said dispensers directly into a "V"-type notch, upon command.

4,338,764

CLOSURE INSERTING METHOD

Edward P. Percarpio, North Haledon, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Division of Ser. No. 942,113, Sep. 13, 1978, Pat. No. 4,226,333, and Ser. No. 880,474, Feb. 23, 1978, Pat. No. 4,136,794, and Ser. No. 729,643, Oct. 5, 1976, Pat. No. 4,111,326, and a continuation-in-part of Ser. No. 663,921, Mar. 4, 1976, abandoned. This application May 8, 1980, Ser. No. 147,868

Int. Cl.[3] **B65B** *7/28;* **B67B** *1/04, 3/24*

U.S. Cl. 53—432 **1 Claim**

1. A method of inserting a cannula pierceable, self-sealing, gas-proof closure into an air evacuated tubular container which comprises:

(a) providing a tubular container having an open end;

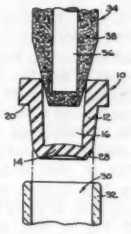
(b) providing a closure member which comprises,

(1) a tubular body having flexible elastic sidewalls, an open first end and a closed second end formed by a cannula pierceable, flexible, elastic end wall integral with said sidewalls; and

(2) a flange disposed radially about the periphery of said sidewalls adjacent to said first end; sad end wall having a convex inner surface and a concave outer surface when pressure on the inner surface equals the pressure on the outer surface; said closure member being of a dimension adapted to mate with the open end of said tubular container so that said sidewalls form a gas tight frictional engagement therewith when inserted therein;

(c) providing an insertion tool which comprises a stiff elongated member having a member first end and a member second end said member first end being enclosed by a layer of resilient, compressible material, said member first end and enclosing layer together forming an insert end, of a dimension such that when inserted into the open first end of said closure member a frictional attachment is effected between said insert end and said closure member;

(d) inserting said insert end of said insert tool into the open first end of said closure member;



(e) compressing said enclosing layer of said tool by the sidewalls and the closed second end of said closure member so that the bore defined by the sidewalls and end wall of said closure member is substantially filled by said insert end and the insert end of said insert tool is attached to said closure member;

(f) evacuating air from said tubular container;

(g) inserting the attached closure member into the open end of said tubular container; and

(h) withdrawing the insertion tool from its attachment with said closure member.

4,338,765

METHOD FOR SEALING A CONTAINER

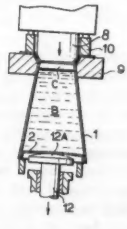
Koichiro Ohmori; Yasuo Tashiro, and Heihachiro Nakayama, all of Tokyo, Japan, assignors to Honshu Paper Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1979, Ser. No. 46,806

Claims priority, application Japan, Apr. 16, 1979, 54-45439

Int. Cl.[3] **B65B** *3/18, 7/28;* **B67B** *3/00*

U.S. Cl. 53—452 **5 Claims**



1. A method for sealing a cylindrical or truncated cone-like container body including a paper material as a main structure material, the lower end of which is sealed with a base, comprising the steps of:

pouring a hot liquid into said container body through its upper open end to a predetermined level;

slightly deforming upwards said base while not deforming said container body;

thereafter sealing the upper open end of said container body while said base is deformed upwards;

permitting said base to deform outwardly or downwardly due to the weight of the liquid and a high gas pressure created by the hot liquid in the head space within said container body;

and

permitting said base to deform inwardly or upwardly due to vacuum within the head space as the liquid cools;

whereby no pinholes or leaks are formed at the sealed portion of the upper end of said container body and a good appearance of said container body is obtained.

4,338,766

APPARATUS AND METHOD FOR PRODUCING A CONTAINER FOR FOODS AND THE LIKE

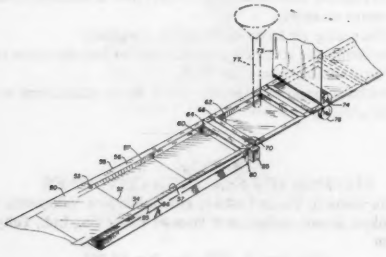
Joel A. Hamilton, 101 Hardenburgh Ave., Demarest, N.J. 07627

Continuation-in-part of Ser. No. 80,685, Oct. 1, 1979, and a continuation-in-part of Ser. No. 19,462, Mar. 9, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,305

Claims priority, application Canada, Feb. 18, 1980, 345843; Ireland, Feb. 19, 1980, 314/80; Israel, Feb. 22, 1980, 59449; PCT Int'l Appl., Feb. 22, 1980, US80/00172; Australia, Feb. 27, 1980, 55926/80; France, Feb. 28, 1980, 80 04456; Italy, Mar. 4, 1980, 48068 A/80; Belgium, Mar. 5, 1980, 199680; Argentina, Mar. 6, 1980, 280206; Mexico, Mar. 6, 1980, 181455; Philippines, Mar. 6, 1980, 23733; Chile, Mar. 7, 1980, 154/80; Colombia, Mar. 7, 1980, 189856; Spain, Mar. 7, 1980, 489.297; Venezuela, Mar. 7, 1980, 355; Rep. of Korea, Mar. 8, 1980, 961/80; Spain, Apr. 30, 1980, 491.079

Int. Cl.³ B65B *3/02*

U.S. Cl. 53—456 **10 Claims**



1. Apparatus for the in-line production of a package for a product which may be granular, solid, semisolid, liquid and/or combinations thereof, said produced package including a lower member and a cover member, said members having facing surfaces adapted for sealing one to the other, said apparatus including:

(a) means for feeding and supporting a lower member of determined width and of a long length of sheet material;

(b) means for forming a plurality of substantially transverse "I" cuts in said lower member and at substantially equal and regular intervals, these cuts being less than the width of the lower member thereby leaving side carrier portions on the lower member, each of said "I" shaped cuts having the bar portion of said "I" cut substantially transverse to the length of the lower member and at each end of the bar portion of the cut there are short cuts substantially parallel to the long edges of the lower member;

(c) means for forming a trough in said lower member, said trough having substantially the same width in the lower member as the length of said transverse cuts;

(d) die shaping means for forming an end stop on each side of each transverse cut and with these end stops and the trough providing a product receiving pocket, said end stops being formed in the lower member absent heat and stretching of said member so that the integrity of all wall portions of the pocket remain substantially unchanged in their travel through the apparatus;

(e) means to feed a desired quantity of product to and into the formed pocket of the lower carrier;

(f) means for attaching a cover member to the rim portions around the pocket to retain the product in the pocket, and

(g) means for severing the sealed pockets into separate packages.

4,338,767

APPARATUS AND METHOD FOR REMOVING PRESSURE SENSITIVE SEALING TAPE FROM CONTAINERS

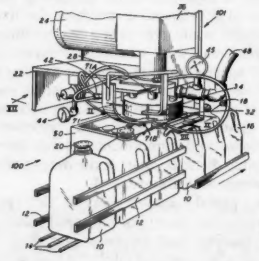
Donald D. Cochran, Bartlett, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Feb. 19, 1980, Ser. No. 122,469

The portion of the term of this patent subsequent to Feb. 12, 1997, has been disclaimed.

Int. Cl.³ B65B *43/40*

U.S. Cl. 53—492 **10 Claims**



7. A method of removing oversized adhesive seals from container openings in a seal removal station as the containers are passed in seriatim into said seal removal station, said method comprising:

rotating a rotor member over said flow of containers in said station, said rotor member having a circular surface formed with fluid passages extending therethrough,

mounting a stator member in a fixed position relative to said rotor in adjacent abutting relation to said rotor circular surface at a side opposed from said flow of containers and communicating with the other side through said fluid passages, said stator having formed therein first and second spaced apart plenum chambers,

communicating said first plenum with sub-atmospheric pressure and said second plenum with above atmospheric pressure,

passing said seals beneath said first plenum, and directing pressure air beneath each said seal on its respective container opening as said each seal passes beneath said first plenum.

4,338,768

AUTOMATIC MACHINE FOR SORTING ITEMS OF CORRESPONDENCE, PARTICULARLY MAGAZINES, INTO BATCHES EACH HAVING A DIFFERENT GENERAL DESTINATION

Aris Ballestrazzi, and Lamberto Tassi, both of Vignola, Italy, assignors to SITMA - Societa Italiana Macchine Antomatiche S.p.A., Spilamberto, Italy

Filed Apr. 15, 1980, Ser. No. 140,602

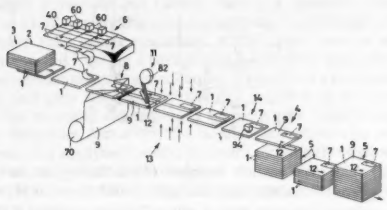
Claims priority, application Italy, Apr. 24, 1979, 22144 A/79

Int. Cl.³ B65B *61/26*

U.S. Cl. 53—495 **11 Claims**

1. An automatic machine for the sorting of items of correspondence, particularly magazines, into batches of different general destination, comprising a station for the collocation of

labels, some of which bearing a final item identification mark, on the individual items, a station for the wrapping of the items plus labels in a film of heat-shrinkable plastics material, a station for sealing and cutting the film between one item and the next, a heating tunnel, a stacker, and conveying means adapted to feed the items one after the other through said stations and as far as the said stacker, characterized in that the machine comprises means for the reading of said identification marks, in association with said label collocating station, so as to detect the presence or absence of said identification marks on said labels before the collocation of the latter on the single items,



feeding means for recognition tabs which means are positioned between said sealing and cutting station and said heating tunnel and commanded by said sealing means to feed a tab in a constant pre-set position on the film which wraps each item onto which there has previously been collocated a label bearing an identification mark and means for detecting said tabs, such means being positioned between said heating tunnel and said stacker to detect the presence of said tabs on the related items and consequently to command the stacker to terminate the formation of a batch of articles with the top-stacking of the item with tab just detected.

4,338,769

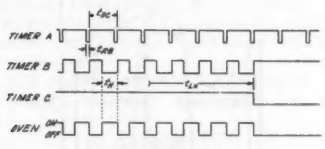
OVEN REGULATOR FOR A SKIN PACKAGING MACHINE

Stephen H. Jones, LaFrance, S.C., assignor to Nordson Corporation, Amherst, Ohio

Filed Mar. 20, 1981, Ser. No. 245,752

Int. Cl.³ B65B *11/52*

U.S. Cl. 53—509 **8 Claims**


TIMER A
TIMER B
TIMER C
OVEN
ON
OFF
t_{DC} = TIME OF DUTY CYCLE.
t_{RB} = TIME TO RESET TIMER B TO RESTART.
t_B = TIME TIMER B IS COMPLETE, BEFORE END OF DUTY CYCLE, OVEN IS ON.
t_{RH} = TIME RESIDUAL HEAT FUNCTION IS PERMITTED TO OPERATE.

1. Apparatus for skin packaging comprising:

a base including a horizontal perforate surface adapted to receive a substrate and at least one article on said substrate,

an oven overlying said perforate surface, said oven including at least one heater,

a frame disposed between said oven and said perforate surface and adapted to receive a film to be heated by said oven and mounted on a substrate,

an alternating current power supply connected to said heater,

at least one solid state relay in series with said heater,

means for controlling said relay to provide a period of low heat and a period of high heat,

said controlling means providing a low heat duty cycle of less than approximately one second, during one portion of said duty cycle power to said heater is full ON and during the remaining portion of said duty cycle power is full OFF.

4,338,770

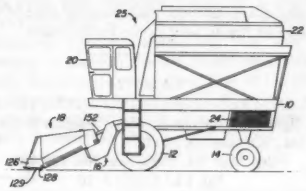
ROW UNIT FOR A COTTON HARVESTER

Francis E. Schlueter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.

Filed May 26, 1981, Ser. No. 266,877

Int. Cl.³ A01D *46/12*

U.S. Cl. 56—33 **59 Claims**



1. In a harvester having a frame adapted for forward movement over a field planted with parallel rows of plants, a row unit adapted for attachment to the frame, comprising: a unit frame including a rear mounting structure, a pair of generally fore-and-aft extending support structures with generally upright sidewalls, means connecting the aft ends of the support structures to the rear mounting structure for supporting said support structures in side-by-side cantilever fashion with the non-connected free fore ends of the support structures spaced apart to define a fore-and-aft extending plant passage for receiving a row of plants therebetween and a generally open top portion which opens upwardly between the sidewalls; harvesting means carried by the support structures adjacent the passage and between the sidewalls for removing the crop from the plants; overhead panel structure; means for releasably securing the overhead panel structure to the unit frame above the support structure to generally close the top portion and define a substantially closed harvesting compartment behind the fore ends and above the plant passage; and wherein the support structures comprise stiffener means for affording both transverse and vertical stability to the support structures to maintain a preselected plant passage width when the overhead panel is in the released condition, said stiffener means including a fore-and-aft extending reinforcing member, and wherein said rear mounting structure includes transverse beam structure connected to the aft end of the reinforcing member.

4,338,771

CLAMPING SYSTEM FOR A KNIFE HAVING AN ANGULAR CROSS-SECTION

Wolfgang Hummel; Gerhard Koch, both of Schmalkalden; Siegfried Wilhelm, Springstille, and Horst Zorn, Schmalkalden, all of German Democratic Rep., assignors to VEB Werkzeugkombinat Schmalkalden, Schmalkalden, German Democratic Rep.

Filed Nov. 3, 1980, Ser. No. 202,959

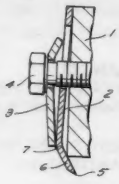
Claims priority, application German Democratic Rep., Dec. 20, 1979, 217924

Int. Cl.³ A01D *55/00, 1/08*

U.S. Cl. 56—294 **3 Claims**

1. A clamping system for a knife with an angular cross-section comprising, a transition zone on said knife, said transition zone extending parallel to a cutting edge of said knife to thereby form a bent cutting edge section relative to the remaining knife portion, a knife holder for holding said knife thereon, said knife holder having an edge portion located between the

cutting edge and the transition zone of the knife, and a clamping element attached to said knife holder so that when said



clamping element is fastened, the transition zone of the knife is straightened and firmly held in the knife holder.

4,338,772

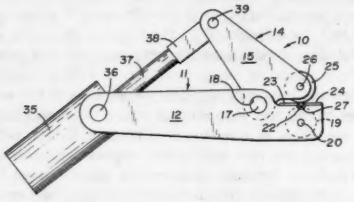
MUSICAL INSTRUMENT STRING MODIFYING DEVICE

Stanley E. Rendell, Kalamazoo, Mich., assignor to Sterlingworth Music, Inc., Kalamazoo, Mich.

Filed Mar. 11, 1980, Ser. No. 129,480

Int. Cl.³ G10D *3/10*

U.S. Cl. 57—9 **7 Claims**



1. An apparatus for modifying a musical instrument string having a core and a cover wire of circular cross-section helically wound on said core, said apparatus comprising a frame, a first roller rotatably mounted on an axis fixed with respect to said frame, and a second roller rotatably mounted on an axis moveable with respect to said first roller, guide means for maintaining said string in proper position to pass between said rollers while said string rotates about its axis and additionally moves axially through said rollers, and power means for applying force to urge said second roller against said first roller, thereby compressing said string and flattening the crown of said cover wire on the outer surface of said string while maintaining substantially the original curvature of said cover wire in the remainder of said cover wire.

4,338,773

CONTROL MECHANISM FOR A FIBER FEED DEVICE ON AN OPEN END SPINNING MECHANISM

Hans Pozzo, and Joachim Dammig, both of Ingolstadt, Fed. Rep. of Germany, assignors to Schubert & Salzer, Ingolstadt, Fed. Rep. of Germany

Filed Dec. 11, 1979, Ser. No. 102,545

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1978, 2855924

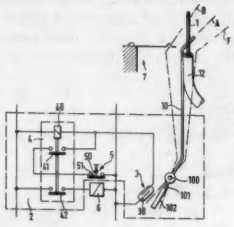
Int. Cl.³ D01H *13/18, 13/16*

U.S. Cl. 57—81 **5 Claims**

1. A control mechanism for a fiber feed device on an open-end spinning machine including a sensor sensing tension in yarn being produced, a control member controlling the operation of said fiber feed device, and a switching mechanism connected to said sensor and said control member controlling the operation of said fiber feed device responsive to a drop in tension in said yarn being produced comprising: said switching mechanism **(2)** including;

(i) a switch-on member **(3)** activated upon drop in yarn tension,

(ii) a main switch member **(4)** electrically connected to said switch-on member **(3)** being switched on upon actuation of said switch-on member **(3)** for putting said sensor **(10)** and said fiber feed device **(60)** out of service,



(iii) said main switch member **(4)** including an interlock means for maintaining said main switch member **(4)** in said switched-on state even if said switch-on member is deactivated, and

(iv) a switch off member **(5)** electrically connected to said main switch member **(4)** for putting said sensor **(10)** and said fiber feed device **(60)** into service.

4,338,774

YARN BRAKE

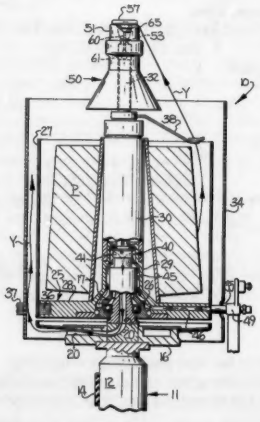
Norbert Welters, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Palitex Project Company GmbH, Krefeld, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 150,054

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1979, 2923426

Int. Cl.³ D01H *7/86, 13/10, 15/00;* **B65H** *59/12*

U.S. Cl. 57—58.86 **12 Claims**



1. In a yarn brake, for applying tension to a moving yarn, comprising a tube through which the moving yarn passes and having a first braking surface formed on a yarn entrance end of said tube, and a movable brake member resting on the entrance end of said tube and having a second braking surface on the underside thereof for cooperating with said first braking surface to define a yarn tensioning passageway therebetween to apply tension to the moving yarn as the yarn passes between said first and second braking surfaces upon entering said tube; the improvement of:

means formed in said tube at the yarn entrance end of said tube defining a slot extending through one side of said tube from the outside to the inside thereof and in communication with said yarn tensioning passageway for receiving a yarn during a threading operation of the yarn into and through said tube without requiring movement of said braking member from the entrance end of said tube, while allowing the yarn to pass from said slot into said tensioning passageway between said first and second braking surfaces upon continued movement of the yarn.

9. In a spindle assembly of a textile yarn processing machine, particularly a two-for-one twister, having a generally vertically and axially extending yarn passageway therethrough and yarn entry tube means positioned at the upper end of said passageway and forming a part of said passageway and including a pneumatic threading mechanism for creating a pneumatic flow in said yarn passageway including a suction in said yarn entry tube means to automatically thread a yarn therethrough during thread-up operation; the combination therewith of a yarn brake for applying tension to a yarn moving through said spindle assembly and comprising:

a first braking surface formed on the upper end of said yarn entry tube;

a movable brake member resting on the upper end of said tube and having a second braking surface on the underside thereof for cooperating with said first braking surface to define a yarn tensioning passageway therebetween to apply tension to the moving yarn as the yarn passes between said first and second braking surfaces upon entering said yarn entry tube; and

means formed in said tube at the upper end of said tube defining a slot extending through one side of said tube from the outside to the inside thereof and in communication with said yarn tensioning passageway for receiving by suction a yarn during a pneumatic threading operation of the yarn into and through said tube without requiring movement of said braking member from the upper end of said tube, while allowing the yarn to pass from said slot into said tensioning passageway between said first and second braking members upon movement of the yarn during operation of said spindle assembly.

4,338,775

INNER RING FOR SPINNING RING

Arthur Würmli, Winterthur, Switzerland, assignor to Rieter Machine Works Limited, Winterthur, Switzerland

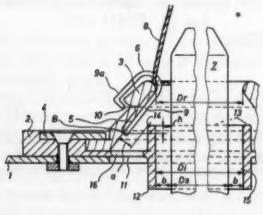
PCT No. PCT/EP79/00079, § 371 Date Jul. 6, 1980, § 102(e) Date Jun. 20, 1980, PCT Pub. No. WO80/00982, PCT Pub. Date May 15, 1980

PCT Filed Oct. 17, 1979, Ser. No. 193,945

Claims priority, application Switzerland, Nov. 6, 1978, 11394/78

Int. Cl.³ D01H *7/54*

U.S. Cl. 57—119 **10 Claims**



1. An inner ring arrangement for a spinning ring of ring spinning or ring twisting machines, comprising:

an inner ring arranged substantially coaxially within the spinning ring so as to maintain therebetween a gapforming clearance;

said spinning ring having an upper traveller guide surface structured for taking-up an inner traveller leg of a traveller, said inner traveller leg extending downwardly and outwardly;

said inner ring having an upper end serving to support an untensioned thread,

said upper end of the inner ring being located at a higher position than a lower limit of the traveller guide surface for said traveller leg on the spinning ring; and

at least one substantially slot-shaped opening extending in circumferential direction provided for one of said rings.

4,338,776

PROCESS FOR THE PRODUCTION OF A CRIMPED CONTINUOUS MULTIFILAMENT YARN

Eberhard Krenzer, Ennepetal-Rüggeberg, Fed. Rep. of Germany, assignor to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid-Lennep, Fed. Rep. of Germany

Filed Nov. 8, 1978, Ser. No. 958,644

Claims priority, application Fed. Rep. of Germany, Nov. 8, 1977, 2749867; Switzerland, Dec. 8, 1977, 014981/77

Int. Cl.³ D02G *1/16*

U.S. Cl. 57—246 **22 Claims**

1. A process for the production of a linearly stable, crimped continuous multifilament yarn which comprises:

guiding the initial non-crimped multifilament yarn between a first and second delivery system through an air-jet texturizing nozzle as a texturizing zone at an overfeed rate corresponding to a circumferential speed V_2 of the second delivery system which is less than the circumferential speed V_1 of the first delivery system, thereby forming multiple random loops in the individual filaments including a minor proportion of metastable loops;

conducting the yarn immediately after it has left the texturizing zone into a heat-free stabilizing zone by means of a third delivery system having a run-out speed V_3 greater than the run-in speed V_2 of the second delivery system, such that metastable loops are pulled out of the yarn without causing any elastic or plastic deformation of the individual filaments;

then conducting the stabilized yarn into a setting zone by means of a fourth delivery system having a run-out circumferential speed V_4 which allows a shrinkage of the yarn to a predetermined amount, the yarn in said setting zone being subjected to a shrinking treatment and heat treatment at temperatures from 150° C. up to about 245° C.; and

winding the yarn after said shrinkage onto a spool at a predetermined yarn tension and at a winding speed V_5 which is less than V_1.

18. The air-jet texturized and linearly stabilized yarn product obtained by the process of claim **1**, said yarn product having a boiling shrinkage of less than 3.3% and an instability of less than 1.0%, measured as the percentage increase in yarn length of a sample having an initial length of one meter under a base load of 1/100 g/den after being subjected to a load of ½ g/den for 30 seconds and then relieved again to the base load of 1/100 g/den for another 30 seconds.

4,338,777

METHOD AND APPARATUS FOR STARTING AND STOPPING AN OPEN END SPINNING MACHINE

Osamu Suzuki, Ohbu; Toshio Yoshizawa, Chiryu; Yoshiaki Yoshida, Ohbu; Keiji Onoue, and Kazuo Seiki, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed May 5, 1980, Ser. No. 147,549

Claims priority, application Japan, May 11, 1979, 54/56958

Int. Cl.³ D01H *15/02, 1/135*

U.S. Cl. 57—263 **10 Claims**

1. In a method of operating an open end spinning machine of the type including a spinning rotor, means for supplying opened fibers into said spinning rotor, means for rotating said

spinning rotor and thereby for forming said fibers into a yarn, means for creating a subatmospheric pressure in said spinning rotor during rotation thereof, a yarn take-up tube extending into said spinning rotor, means for taking-up said yarn through said yarn take-up tube from said spinning rotor, and means for winding the taken-up yarn onto a bobbin, said method of operating said spinning machine comprising stopping said spinning machine, thereby resulting in a free end of said yarn, and thereafter starting said spinning machine while connecting the leading end of newly formed yarn to said free end, the improvement of conducting said stopping and starting in a manner to prevent the occurrence of snarls in said free end regardless of the degree of twist in said yarn and to limit the length of said free end which becomes unraveled, said improvement comprising:

upon stopping said spinning machine:

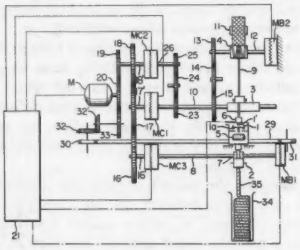
stopping said fiber supplying means and thereby stopping the supply of fibers to said spinning rotor;

thereafter stopping said yarn taking-up means and said winding means, and simultaneously holding said yarn at a position adjacent a yarn outlet end of said yarn take-up tube and maintaining said free end within said yarn take-up tube; and

thereafter stopping rotation of said spinning rotor and removing the effect of said subatmospheric pressure within said spinning rotor and within said yarn take-up tube and acting on said free end; and

upon starting said spinning machine:

starting rotation of said spinning rotor and producing said subatmospheric pressure;



maintaining said free end held at said position and in said yarn take-up tube until said subatmospheric pressure in said spinning rotor and said yarn take-up tube reaches a level sufficient to prevent the occurrence of snarls in said free end, and thereby limiting the length of said free end which becomes unraveled;

then releasing said free end;

operating said yarn taking-up means and said winding means in a direction opposite to normal operation of said spinning machine and thereby pushing said free end into said spinning rotor;

starting said fiber supplying means to feed fibers to said spinning rotor, thereby forming new yarn, and connecting the leading end of said new yarn to said free end; and

then operating said yarn taking-up means and said winding means in the direction of normal operation.

4. In an open end spinning machine of the type including a spinning rotor associated with means for producing therein a subatmospheric pressure, means for supplying opened fibers into said spinning rotor, means for rotating said spinning rotor and thereby for forming said fibers into a yarn, a yarn take-up tube extending into said spinning rotor, means for taking-up said yarn through said yarn take-up tube from said spinning rotor, and means for winding the taken-up yarn onto a bobbin, said spinning machine being capable of being stopped, resulting in a free end of said yarn, and thereafter started, while connecting the leading end of a newly formed yarn to said free end, the improvement comprising means for, upon stopping and subsequent starting of said spinning machine, preventing the occurrence of snarls in said free end regardless of the degree of twist in said yarn and limiting the length of said free end which becomes unraveled, said preventing and limiting means comprising:

holding means positioned adjacent an outlet end of said yarn take-up tube for holding said yarn; and

control means operatively connected for controlling the operation of said holding means, said subatmospheric pressure producing means, said fiber supplying means, said yarn taking-up means, and said winding means in accordance with a predetermined time sequence such that when said spinning machine is stopped:

said fiber supplying means is first stopped;

thereafter said yarn taking-up means and said winding means are stopped, while simultaneously said holding means operates to hold said yarn at said position and to maintain said free end in said yarn take-up tube; and

thereafter said subatmospheric pressure producing means is stopped to remove the effect of the subatmospheric pressure from within said spinning chamber and within said yarn take-up tube; and such that when said spinning machine subsequently is started:

said subatmospheric pressure producing means is started to produce the subatmospheric pressure;

said holding means is maintained holding said yarn at said position with said free end in said yarn take-up tube until said subatmospheric pressure in said spinning rotor and in said yarn take-up tube reaches a level sufficient to prevent the occurrence of snarls in said free end, thereby limiting the length of said free end which becomes unraveled;

then said holding means releases said yarn;

said yarn taking-up means and said winding means are operated in a direction opposite to normal operation of said spinning machine to push said free end into said spinning rotor;

said fiber supplying means is operated to feed fibers to said spinning rotor, and the leading end of a new yarn is connected to said free end; and

then said yarn taking-up means and said winding means are operated in the direction of normal operation.

4,338,778

APPARATUS FOR DETECTING AN ERRONEOUSLY INSERTED EMPTY BOBBIN IN A SPINNING FRAME PROVIDED WITH AN AUTOMATIC DOFFING AND DONNING APPARATUS

Osamu Suzuki, Oobu; Takayuki Morita, Kariya; Masashi Ushino, Hekinan, and Hideo Hirano, Aichi, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Jun. 25, 1980, Ser. No. 162,807

Claims priority, application Japan, Jul. 10, 1979, 54/94802[U]

Int. Cl.³ D01H 9/18

U.S. Cl. 57—276 **11 Claims**

1. In a spinning frame provided with an automatic doffing and donning apparatus and an empty bobbin outlet, comprising a conveyor having empty bobbin supporting pegs mounted thereon, for feeding empty bobbins which are to be donned onto spindles of the spinning frame by means of said doffing and donning apparatus, the improvement comprising a detecting apparatus for detecting whether or not an empty bobbin is

correctly inserted onto any one of said empty bobbin supporting pegs, said detecting apparatus comprising:

two photodetector circuits each comprising a pair of light emitters and light receivers, one pair being disposed at the upper portion of an empty bobbin outlet of said spinning frame and the other pair being disposed at the lower portion of said empty bobbin outlet, so that said light emitters face the corresponding light receivers sandwiching said conveyor therebetween,

one of said two pairs being displaced from the other pair in an empty bobbin transfer direction of said conveyor by a distance corresponding to the difference in diameters of said upper and lower portions of said empty bobbin, so that passage of the upper and lower portions of said empty bobbin inserted onto any one of said empty bobbin supporting pegs is cooperatively detected by said photodetector circuits.

4,338,779

APPARATUS FOR THE PRODUCTION OF ORNAMENTAL LINK CHAINS (VENETIAN CHAINS) READY FOR SOLDERING

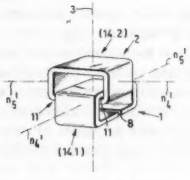
Karl-Heinz Lange, Pforzheim, Fed. Rep. of Germany, assignor to FICO Fischer & Co. Maschinenbau GmbH, Pforzheim, Fed. Rep. of Germany

Division of Ser. No. 75,023, Sep. 13, 1979. This application Dec. 23, 1980, Ser. No. 220,012

Claims priority, application Fed. Rep. of Germany, Sep. 13, 1978, 2839746

Int. Cl.³ B21L *11/00*

U.S. Cl. 59—25 **8 Claims**



1. In an improved apparatus for production of ornamental link chains ready for soldering preparation with individual links bent at right angles out of flat wire each with two axial arms and a first and a second transverse web, which comprises:

drawing in means for drawing a flat wire into the apparatus;

a cutting device for cutting the wire to length;

a preliminary bending device for bending the flat wire into a flat U with two short arms;

a conveyor device for conveying the flat U;

a bending means for finishing the flat U by bending to form an individual link such that the two short arms form the second transverse web with a butt-joint of their two free ends;

an adjusting means for adjusting the individual link in height while the first transverse web is disposed in a predetermined assembly plane;

a positioning means for detachably fixing the individual link and positioning the same for mounting of the following individual link which is now formed for the chain;

a conveying means for conveying the individual link along an extraction section;

a striking device for striking the chain to provide a preset adjustment of a minimum width of a gap to receive solder between the free ends;

the improvement comprising:

a first horizontal axis disposed in the plane of conveying of the conveyor device and along which axis are disposed the cutting device, the preliminary bending device, the conveyor device, the positioning means and the striking device which are separated from each other and along which the conveyor device and the striking device have their direction of action;

an upper knife movable in up-down direction and forming part of the cutting device;

a lower knife fixed in height and forming part of the cutting device;

an upper bending tool movable in up-down direction and forming part of the preliminary bending device;

a first holding down means movable in up-down direction and forming part of the preliminary bending device;

a lower preliminary bending mandrel fixed in height and forming part of the preliminary bending device;

an upper closing tool movable in up-down direction and forming part of the bending means;

a second holding down means movable in up-down direction and forming part of the bending means;

a lower closing mandrel fixed in height and forming part of the bending means and forming together with the upper closing tool and the second holding down means a closing device, said lower closing mandrel being movable in the direction of its longitudinal axis and parallel to the first horizontal axis;

a stopper device associated with the upper closing tool for adjusting the particular closed individual link in height;

a device constructed in the form of a diagonal tie rotatable around a second longitudinal axis and forming part of the positioning means and of the conveying means;

and four gripping elements each with a contact surface prism forming part of the device and disposed on an arc of a circle for deflection against a restoring force directed inwards toward the second longitudinal axis and defining with their contact surface prisms an upper portion of the extraction section, said extraction section traversing the first horizontal axis.

4,338,780

METHOD OF COOLING A GAS TURBINE BLADE AND APPARATUS THEREFOR

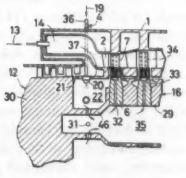
Takeshi Sakamoto; Shunichi Anzai; Nariyoshi Kobayashi, and Ryoichiro Oshima, all of Ibaraki, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1978, Ser. No. 964,632

Claims priority, application Japan, Dec. 2, 1977, 52-143870

Int. Cl.³ F02C *7/18*

U.S. Cl. 60—39.05 **10 Claims**



1. A method of cooling a moving blade of a gas turbine in which high-pressure air from a compressor is passed through a combustor to make it a combustion gas, the combustion gas is introduced into a main gas passageway with a cascade including the moving blade disposed therein, and power is taken out by expansion of the combustion gas, comprising the steps of:

extracting part of the high-pressure air from the compressor in order to use it for cooling;

spraying water into the extracted air, and mixing water drops with the air and cooling said air, to prepare a coolant for cooling the moving blade;

introducing said coolant into coolant passageways inside said moving blade, to cool said moving blade; and

emitting into the main gas passageway said coolant having cooled said moving blade, wherein the step of spraying water and preparing said coolant is performed in a water

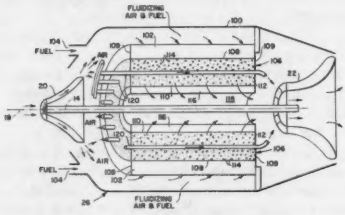
spraying chamber located outside a shaft between a final stage portion of said compressor and a disc of a first stage of said turbine by a nozzle communicating with a water pipe and mounted to a stationary wall on a radially outer side of the turbine.

4,338,781

ROTATING FLUIDIZED BED COMBUSTOR

William H. Belke, Peoria, and George B. Grim, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 1, 1979, Ser. No. 102,199
Int. Cl.³ F02C 3/26
U.S. Cl. 60—39.35 **17 Claims**



1. A rotatable fluidized bed combustor (**26**) for exothermically reacting a gaseous agent and a fuel comprising:

a. an outer, substantially cylindrical, elongated perforated wall (**108**);

b. an inner, substantially cylindrical, perforated wall (**110**) spaced apart and substantially co-axial and co-extensive with said outer perforated wall (**108**);

c. enclosing walls (**109**) defining with said outer and inner perforated walls (**108,110**) a substantially cylindrical annular fluidization chamber (**112**);

d. a fluidizable bed of pulverulent solid particles (**114**) in said chamber (**112**);

e. means (**14**) for rotating said chamber (**112**) about the axis (**18**) to cause the particles to centrifugally gravitate toward said outer perforated wall (**108**);

f. means (**102**) for feeding a combustible fuel in a gaseous agent stream into said chamber (**112**) through said outer perforated wall (**108**), said gaseous agent having flow characteristics suitable for fluidizing said particles in said chamber (**112**), said fuel reacting with at least a portion of said gaseous agent in said chamber (**112**) to form gaseous combustion products, said unreacted gaseous agent and said gaseous combustion products exiting said chamber (**112**) through said inner perforated wall (**110**);

g. means (**116**) for receiving said gaseous combustion products and unreacted gaseous agent exiting from said chamber (**112**) through said inner perforated wall (**110**); and

h. means (**118**), communicating with said means (**116**) for receiving, for directing said unreacted gaseous agent and said gaseous combustion products exiting said inner perforated wall (**110**) away from said chamber (**112**).

4,338,782

GAS TURBINE COMBUSTION SYSTEM UTILIZING RENEWABLE AND NON-CRITICAL SOLID FUELS WITH RESIDUE REMOVER TO MINIMIZE ENVIRONMENTAL POLLUTION

William C. Marchand, 11339 Roxbury, Detroit, Mich. 48224

Filed Nov. 23, 1979, Ser. No. 96,760
Int. Cl.³ F02C 3/26
U.S. Cl. 60—39.46 S **7 Claims**

1. A combustor apparatus for burning solid fuel with oxidizing fluid and for removing solid residues from the products of combustion, said apparatus comprising:

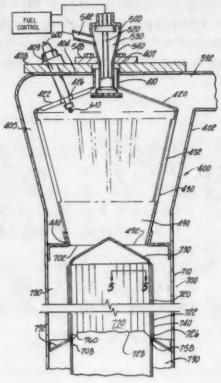
a combustion chamber;

means for pulverizing said solid fuel and for injecting said pulverized solid fuel into said combustion chamber, said pulverizing and injecting means being mounted into said combustion chamber, said means for pulverizing and for injecting said pulverized solid fuel further comprising:

an injector having an outer body and an inner body rotatably mounted with respect to said outer body;

means for repulverizing coagulated pulverized solid fuel, said repulverizing means being integral with said inner and outer body of said injector; and

means for injecting the repulverized solid fuel into said combustion chamber;



means for supplying oxidizing fluid into said combustion chamber, said supplying means mixing said fluid with said repulverized solid fuel to form a mixture of combustion;

means for igniting said mixture of combustion, said igniting means being mounted to said combustion chamber such that the mixture of combustion in said combustion chamber is ignited to form gaseous products of combustion and solid residues suspended in said gaseous products of combustion; and

means for separating said solid residues from the gaseous products of combustion, said separating means further comprising an inertia separator mounted downstream of said combustor.

4,338,783

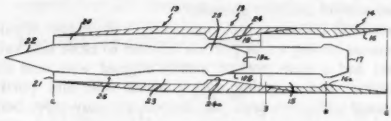
TWO-STAGE HYPERSONIC RAMJET

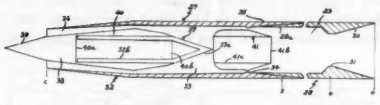
John L. Leingang, Dayton, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 4, 1975, Ser. No. 610,513
Int. Cl.³ F02K 7/18, 9/76
U.S. Cl. 60—225 **1 Claim**

1. A two-stage ramjet comprising: an inlet-diffuser section; a forward cruise stage disposed immediately downstream of, or made integral with said inlet-diffuser section and having a cruise-combustion chamber and relatively small, cruise exhaust nozzle specifically optimized for producing cruise flight varying between predesigned relatively high supersonic and hypersonic flight speeds; and an aft boost stage tandem mounted to the rear of said forward cruise stage and including a boost-combustion chamber and relatively large, boost-exhaust nozzle expressly optimized for generating an accelerative thrust or boost from a previously attained, ground- or air-launched speed of from low-to-mid-supersonic, to the said predesigned relatively high supersonic speed at which firing of the said forward cruise stage occurs; said boost-combustion chamber having an inlet section arranged in an interfitted, air sealed relation with, and adapted to be initially quick-releasably mounted to the outlet portion of said cruise-nozzle to thereby

provide a continuous flow path between said cruise and boost stages when said boost stage is being actuated to generate the boost phase of ramjet operation, and to be subsequently ejectable from said cruise stage when said boost phase of ramjet operation has been completed; said boost stage further including a first, relatively elongated plug member of a predetermined configuration and extending in a centrally-disposed relation along the longitudinal axis of said boost-combustion chamber to terminate in a first, aft, plug member-end portion at, and particularly assisting in the formation of the throat portion of the said relatively enlarged, boost-exhaust nozzle to that preselected to positively provide for the said optimization of the boost stage to ensure the boost phase of ramjet operation from the said speed of launch to the said predesigned relatively high supersonic speed; said cruise stage further including a





combined center body and second, relatively elongated plug member terminating in a first, forward end portion incorporating a spike element extending through and further upstream of the inlet diffuser section, and a second, aft plug member-end portion at, and particularly assisting in the formation of the reduced-sized, throat portion of the second relatively small, cruise-exhaust nozzle to that preselected to specifically provide for the optimization of the cruise stage to ensure the cruise phase of ramjet operation from the said relatively high supersonic speed to the selected hypersonic speed; the aft end portion of said second, plug member incorporating a tapered, integral end section projecting in a further aft direction in an air-sealed relation into a recess formed in a second, forward end portion of said first, plug member to thereby ensure the said continuous flow path between said boost and cruise phases during the operation of said boost stage.

4,338,784

METHOD OF RECYCLING COLLECTED EXHAUST PARTICLES

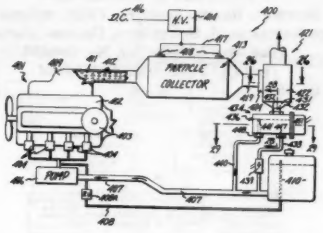
Benjamin Y. H. Liu, North Oaks; David B. Kittelson, Minneapolis; Daniel F. Dolan, St. Anthony, and David Y. H. Pui, Minneapolis, all of Minn., assignors to The Regents of the University of Minn., Minneapolis, Minn.

Division of Ser. No. 68,703, Aug. 22, 1979, Pat. No. 4,316,360, which is a continuation-in-part of Ser. No. 38,077, May 11, 1979, Pat. No. 4,304,096. This application Dec. 11, 1980, Ser. No. 215,457

Int. Cl.³ F01N *3/00*

U.S. Cl. 60—274 **10 Claims**

1. A method of reducing the amount of particles emitted by a combustion apparatus comprising: forming particles during combustion of hydrocarbon fuel and air in a combustion chamber of a combustion apparatus, imparting electrical charges on a substantial portion of the particles that are formed during said combustion during said imparting of electrical charges on the particles a substantially equal number of particles are positively charged and negatively charged whereby the particles as a whole are a substantially electrical neutral mass of particles, moving the charged particles with combustion gas directly from the combustion apparatus to a particle collector without an intermediate particle charging step whereby the charge on the particles remains substantially the same, said particle collector having particle collecting means, establishing an electric field by applying a voltage to the particle collecting means, and moving the charged particles without substantially changing the electrical charges on the particles into the electric field to collect at least some of the charged particles on the particle



collecting means, said particles collected on the particle collecting means separating from the collecting means as large particles, moving said large particles with said gas from said particle collecting means, collecting said large particles that become separated from the particle collecting means, and introducing said collected large particles into the hydrocarbon fuel for the combustion apparatus.

4,338,785

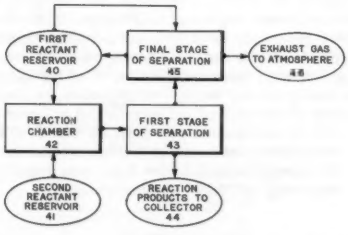
EXHAUST GAS TREATMENT BY A REACTANT

Stephen F. Skala, 3839 S. Wenonah Ave., Berwyn, Ill. 60402

Continuation-in-part of Ser. No. 301,285, Oct. 27, 1972, abandoned, Ser. No. 457,207, Apr. 2, 1974, Pat. No. 3,911,284, Ser. No. 463,454, Apr. 26, 1974, abandoned, Ser. No. 578,527, May 19, 1975, Pat. No. 4,020,798, and Ser. No. 779,788, Mar. 21, 1977, Pat. No. 4,189,916. This application Oct. 4, 1979, Ser. No. 81,668

Int. Cl.³ F01N *3/02*

U.S. Cl. 60—311 **11 Claims**


FIRST REACTANT RESERVOIR 40
FINAL STAGE OF SEPARATION 45
EXHAUST GAS TO ATMOSPHERE 46
REACTION CHAMBER 42
FIRST STAGE OF SEPARATION 43
SECOND REACTANT RESERVOIR 41
REACTION PRODUCTS TO COLLECTOR 44

1. A method for separating and collecting reaction products from exhaust gases, comprising the steps of:

reacting a first reactant and a second reactant in a combustion chamber to form the reaction products in the exhaust gases,

separating a portion of the reaction products from the exhaust gases in a first stage of separation and collecting the reaction products in a concentrated form,

separating substantially all of the remaining reaction products from the exhaust gases in a final stage of separation and releasing the exhaust gases to the atmosphere,

incorporating the reaction products separated in the final stage of separation into the first reactant, and

reacting the first reactant having incorporated therein the reaction products separated in the final stage of separation with the second reactant in the combustion chamber

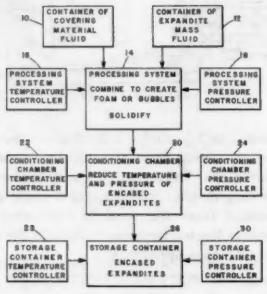
whereby the incorporated reaction products are included in the separation of the first stage of separation and thus circulate until substantially all of the reaction products are collected in concentrated form by the first stage of separation.

4,338,786

PREVENTION OF PERMANENT DEFORMATION OF ENCASED EXPANDITES

Jens O. Sorensen, Rancho Santa Fe, Calif., assignor to Trade Finance International, Georgetown, Cayman Islands

Filed May 5, 1980, Ser. No. 146,459
Int. Cl.³ F03C 5/00; F03G 7/04
U.S. Cl. 60—531 **20 Claims**



11. In a system for manufacturing encased expandites that constitute a thermodynamic working fluid for use in combination with a thermal fluid in a thermodynamic energy conversion system wherein the working fluid is made up of thousands of encased expandites, each of which includes a mass having a flexible covering encasing the mass for enabling rapid heat transfer between the mass and the thermal fluid, for enabling the encased expandite to maintain its integrity as a separate object when submerged in the thermal fluid and for enabling the volume of the encased expandite to change in accordance with the characteristic interdependent relationship between changes in the density, temperature and pressure of the mass when the encased expandite is submerged in the thermal fluid, wherein each of the flexible coverings has a maximum containing volume prior to becoming permanently deformed, a system for preventing permanent deformation of the encased expandites during use and storage, characterized by comprising,

means for maintaining the encased expandites at a combination of temperature and pressure that is different than atmospheric conditions to thereby prevent the volume of the encased expandite mass from exceeding the maximum containing volume of the flexible cover.

4,338,787

VARIABLE RATIO BRAKE MASTER CYLINDER DEVICE

Hiroshi Kawaguchi, Mishima, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Sep. 25, 1980, Ser. No. 190,746
Claims priority, application Japan, Oct. 3, 1979, 54/128139
Int. Cl.³ B60T 11/20
U.S. Cl. 60—562 **6 Claims**

1. A brake master cylinder device, comprising:

(a) a body within which are formed a first cylinder bore and a second cylinder bore;

(b) a first piston member, comprising a first piston engaged with said first cylinder bore and a second piston engaged with said second cylinder bore, a first cylinder chamber and a second cylinder chamber being, respectively, defined by the cooperation of said first piston with said first cylinder bore and by the cooperation of said second piston with said second cylinder bore, the displacement of said first piston member with respect to said body in a first direction tending to reduce the volume of said first cylinder chamber and also to reduce the volume of said second cylinder chamber;

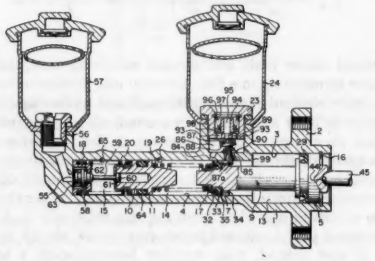
(c) a first means for biasing said first piston member in a direction opposite to said first direction with respect to said body;

(d) a fluid reservoir for keeping fluid substantially at atmospheric pressure;

(e) a fluid conduit opening from said second cylinder chamber for connection to a first brake actuator in order to supply operating fluid pressure thereto;

(f) a first one way valve, which always allows fluid to flow substantially freely from said first cylinder chamber to said second cylinder chamber;

(g) a second one way valve comprising a valve port, a valve element having a disk portion adapted to close said valve port and a stem portion axially aligned with said disk portion, and a spring which biases said disk portion toward said valve port, said second one way valve being adapted to allow fluid to flow substantially freely from said fluid reservoir to said first piston chamber when the pressure in said first cylinder chamber is below substantially atmospheric pressure and to allow fluid to flow substantially freely from said fluid reservoir to said first cylinder chamber and from said second cylinder chamber



to said fluid reservoir when said disk portion of said valve element is tilted relative to said valve port by said stem portion being engaged with said first piston member displaced to its extreme position in said direction opposite to said first direction; and

(h) venting means for venting said first cylinder chamber, comprising at least one vent port located near said valve port of said second one way valve, and an annular valve element having a central opening and adapted to close said vent port while allowing said valve port of said second one way valve to be unobstructed by said central opening being aligned therewith, and a spring for biasing said annular valve element to the position where it closes said vent port, said venting means being adapted to allow fluid to flow from said first cylinder chamber to said fluid reservoir when the fluid pressure in said first cylinder chamber rises to a predetermined fluid pressure value;

(i) whereby, as said first piston member is displaced in said first direction from its extreme position in said direction opposite to said first direction, as the pressure within said fluid conduit and said second cylinder chamber rises so as to progressively operate said first brake actuator more and more, until the pressure in said first cylinder chamber reaches said predetermined pressure value, said pressure in said first cylinder chamber is substantially the same as that in said second cylinder chamber, said first one way valve allowing substantially free passage of fluid from said first cylinder chamber to said second cylinder chamber; and when the pressure in said first cylinder chamber

reaches said predetermined fluid pressure value, said venting means operates, so as to vent said first cylinder chamber to said fluid reservoir, to prevent further rise of the pressure within said first cylinder chamber, the further rise of pressure within said second cylinder chamber being unaffected by the action of said venting means, and reverse flow of fluid from said second cylinder chamber to said first cylinder chamber being definitely always prevented except in the said extreme position of the second piston member;

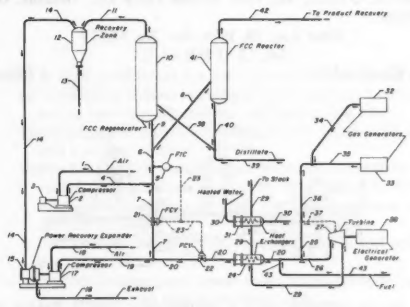
(j) whereby the pressure available in said fluid conduit, for a given amount of pressure exerted on said first piston member in said first direction, is higher in the latter period of operation of said master cylinder device, after said venting means has started to vent fluid to said fluid reservoir from said first cylinder chamber, than in the former period of operation of said master cylinder device, before said venting means has started to vent fluid to said fluid reservoir from said first cylinder chamber.

4,338,788

COGENERATION PROCESS LINKING FCC REGENERATOR AND POWER PLANT TURBINE

Allen H. Fink, Des Plaines, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jul. 22, 1980, Ser. No. 171,225
Int. Cl.³ F01K *17/00*
U.S. Cl. 60—648 **13 Claims**



1. A process for generating electrical power which comprises the steps of:

(a) producing a pressurized air stream by compressing air to a superatmospheric pressure in a compressor driven by a power recovery expander which receives as a motive stream the flue gas stream of the catalyst regeneration zone of a fluidized catalytic cracking unit;

(b) heating the pressurized air stream by indirect heat exchange; and,

(c) passing the pressurized air stream and a high temperature gas stream through a turbine which drives an electrical generator and thereby producing a turbine effluent stream.

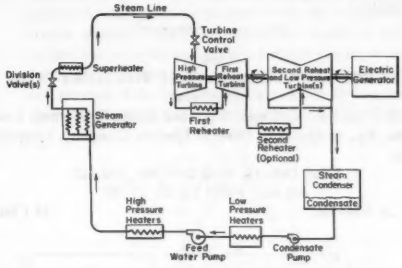
4,338,789

METHOD OF VARYING TURBINE OUTPUT OF A SUPERCRITICAL-PRESSURE STEAM GENERATOR-TURBINE INSTALLATION

John E. Dolan, 171 Druid Ave., Dumont, N.J. 07628

Filed Feb. 1, 1980, Ser. No. 117,803
Int. Cl.³ F01K *3/00*
U.S. Cl. 60—652 **7 Claims**

1. A method of varying turbine output in an installation including a steam generator, a feed water pump for producing pressure in said generator to a predetermined amount in excess of the critical pressure of steam, a superheater, at least one controllable division valve positioned between said superheater and said steam generator for regulating the pressure of steam delivered from said steam generator to said superheater, a turbine receiving steam from said superheater and at least one turbine control valve for regulating entry of steam to said turbine; including the steps of setting a turbine control valve to a predetermined open position, maintaining said division valve in a fully open position, and varying the rate of delivery of said



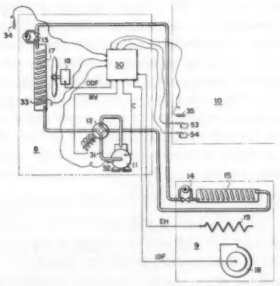
feed water pump to vary steam pressure in said steam generator between said predetermined amount in excess of said critical pressure and an amount slightly above said critical pressure whereby the steam pressure at said turbine throttle valve is varied between said amount slightly above said critical pressure and said predetermined amount in excess of said critical pressure.

4,338,790

CONTROL AND METHOD FOR DEFROSTING A HEAT PUMP OUTDOOR HEAT EXCHANGER

James F. Saunders, Onalaska, and Robert E. Krocker, Stoddard, both of Wis., assignors to The Trane Company, La Crosse, Wis.

Filed Feb. 21, 1980, Ser. No. 123,308
Int. Cl.³ F25D *21/00*
U.S. Cl. 62—80 **20 Claims**



1. In an air source heat pump for temperature conditioning a comfort zone, including an outdoor heat exchanger, an indoor heat exchanger, a compressor connected to a reversing valve by a refrigerant suction line, and means for moving air through the outdoor and indoor heat exchangers in heat transfer relation therewith, a control for defrosting the outdoor heat exchanger to melt ice and frost accumulated thereon during operation of the heat pump in a heating mode, said control comprising

(a) a sensor for sensing the temperature in the comfort zone;

(b) a suction line temperature sensor;

(c) a sensor for sensing the temperature of outdoor ambient air; and

(d) control means responsive to the suction line, comfort

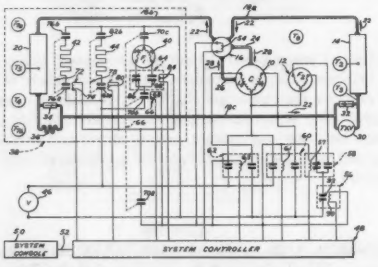
zone, and outdoor ambient air temperature sensors, and operative to determine as a continuous function of the magnitude of the temperatures of the comfort zone, the suction line, and the outdoor ambient air, the maximum permissible degradation of heat transfer in the outdoor heat exchanger at which the defrost cycle should be initiated to optimize the efficiency and reliability of the heat pump and operative to initiate the defrost cycle accordingly.

4,338,791

MICROCOMPUTER CONTROL FOR HEAT PUMP SYSTEM

Custis L. Stamp, Jr., Tyler, Tex., and Rollie R. Herzog, Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Oct. 14, 1980, Ser. No. 196,425
Int. Cl.³ F25B *13/00, 29/00*
U.S. Cl. 62—160 **14 Claims**



1. A method of controlling a multi-state heat pump system to minimize energy usage while the system is being operated to bring the temperature of an enclosed space to a desired temperature level, the method comprising:

establishing a target temperature value representative of the desired temperature;

sensing actual temperature of the enclosed space;

initiating operation of the heat pump system in response to a differential between the actual and target temperatures;

measuring the time rate of change in the actual temperature at the expiration of preselected time intervals during which an increase in operating state of the heat pump system to a higher level of energy usage is inhibited; and

increasing the heat pump system to only the next higher operating state upon expiration of said preselected time intervals only when the time rate of change of actual temperature is less than a value required to substantially reach the target temperature within a predetermined time period.

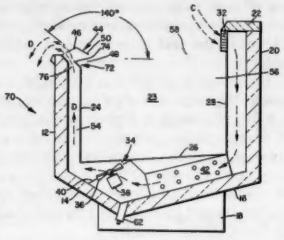
4,338,792

REFRIGERATED MERCHANDISER DISPLAY CASE WITH DEFROST DEVICE

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Continuation-in-part of Ser. No. 60,459, Jul. 25, 1980, Pat. No. 4,295,340, which is a continuation-in-part of Ser. No. 8,111, Jan. 31, 1979, Ser. No. 11,804, Feb. 14, 1979, Ser. No. 25,350, Mar. 30, 1979, Ser. No. 76,669, Sep. 18, 1979, and Ser. No. 145,859, May 1, 1980. This application Jan. 19, 1981, Ser. No. 225,997
Int. Cl.³ A47F *3/04*
U.S. Cl. 62—256 **32 Claims**

1. In a refrigerated display cabinet having outer walls defining a product storage and display space and having an access opening in one of said walls for permitting products to be moved into and out of said storage and display space; at least one air conduit disposed about said storage and display space for containing an air band; a refrigeration means; air moving means enabling circulation of an air band within said conduit and across said access opening in a refrigeration cycle of operation; and said air moving means also permitting circulation of an ambient air band during a defrost cycle; the improvement comprising an air flow restriction baffle positioned within said air conduit adjacent to the discharge end of said air conduit



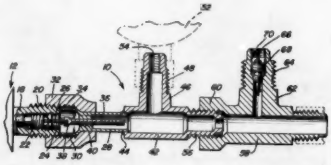
when said cabinet is operated in an air defrost cycle, and said air flow restriction baffle operable to increase the velocity of the air band in said conduit during a defrost cycle sufficiently to expel the defrost air band substantially out of said cabinet.

4,338,793

ADAPTER FOR REFRIGERATION SYSTEM ACCESS VALVE

James E. O'Hern, Jr., 1359 Sanden Ferry Dr., Decatur, Ga. 30033

Filed Aug. 10, 1979, Ser. No. 65,577
Int. Cl.³ F25B *45/00*
U.S. Cl. 62—292 **2 Claims**



1. In combination with a refrigeration system having an access valve which includes a valve stem connected to a valve member for actuation thereof, an adapter comprising a tubular member having a flow passage therethrough, bell-shaped means on one end of the tubular member for achieving alignment during coupling of the tubular member to the access valve, an abutment mounted in the tubular member engaging the valve stem to actuate the valve stem to open the access valve when the tubular member is coupled to the access valve, said abutment including a longitudinally extending threaded member, threadedly engaged with a portion of the interior of the tubular member to vary the longitudinal position of the abutment in relation to the tubular member thereby enabling the abutment member to be adjusted so that the tubular member will be at least partially coupled to the access valve before the abutment actuates the valve stem, said abutment being completely enclosed by the tubular member and inaccessible from a position exteriorly of the tubular member when the tubular member is connected to the access valve, said flow passage through the tubular member remaining continually open during adjustment of the abutment and movement of the access valve and means on said tubular member for communication with a refrigeration supply assembly to supply refrigeration through the tubular member and access valve into the refrigeration system, said access valve being externally threaded, said bell-shaped coupling means on the tubular member including an internally threaded coupling member for coupling the tubular member to the access valve with the axis of the tubular member being aligned with the access valve, said

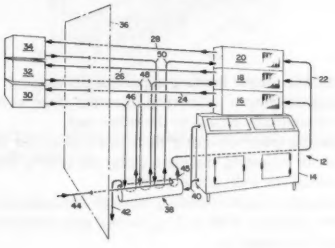
valve stem being disposed centrally of the access valve and the abutment being oriented along the longitudinal axis of the tubular member in alignment with the valve stem, said means on the tubular member for communication with a refrigeration supply assembly including at least one fitting having a laterally extending branch which is externally threaded for coupling with a refrigerant supply means, said branch being internally threaded, and a valve means duplicative of the access valve in the internally threaded portion of the branch for actuation to an open position when the refrigerant supply assembly is connected thereto.

4,338,794

HIGH EFFICIENCY ICE-MAKING SYSTEM

Hans Haasis, Jr., 1421 Duarte Cir., Simi Valley, Calif. 93065

Filed Mar. 17, 1980, Ser. No. 130,691
Int. Cl.³ F25C *1/00*
U.S. Cl. 62—348 **7 Claims**



1. A high production ice-making system comprising:

an ice-making system including a base having a storage bin and at least one ice-making and harvesting unit;

heat-exchanger means including a first input cold section and a second section;

means for supplying drain water from said ice-making unit to said heat exchanger means to flow through said heat exchanger means from said input cold section to said second section;

a first coil mounted within the input section of said heat exchanger means;

means for routing input water to be frozen through said first coil and then to said ice-making unit;

at least one additional heat exchange coil mounted in the second section of said heat exchanger means;

means for routing the condensed liquid refrigerant coolant for said ice-making unit through said additional coil to further cool said refrigerant liquid below the ambient temperature prior to the expansion of said refrigerant liquid within said ice-making unit; and

said heat exchanger means being provided with means located between the first and second sections thereof to avoid undue mixing of the cold water supplied to said heat exchanger.

4,338,795

BEVERAGE INSULATING AND COOLING RECEPTACLE

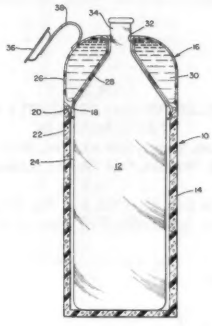
Robert C. House, Jr., 21689 Albion, Farmington Hills, Mich. 48024

Filed Apr. 13, 1981, Ser. No. 253,436
Int. Cl.³ F25D *3/08*
U.S. Cl. 62—372 **4 Claims**

1. An insulating and cooling receptacle for a beverage-containing cylindrical bottle of the type having an elongated tapering neck terminating in a top portion of a diameter which is significantly less than that of the main body of the bottle, which comprises:

a hollow cylindrical base portion having an open top and dimensioned so its internal diameter leaves a thin annular air gap between the side walls of said base portion and the beverage bottle to be removably received therein, said base portion being further dimensioned so its height substantially corresponds with the height of the straight-sided cylindrical portion of said beverage bottle;

a cap portion dimensioned to be removably secured to the open top of said base portion and of sufficient height to permit only enough of the top portion of the beverage bottle to project therefrom as is required to comfortably permit beverage to be poured from the bottle or to be drunk directly therefrom while the bottle is contained within the receptacle, said cap portion having a centrally located opening at its top to permit said projection of the top portion of the bottle, said cap portion having inner and outer concentric walls joined together near their upper



and lower extremities to create a fluid-tight annular chamber therebetween which is permanently filled with a freezable substance, said outer wall being generally cylindrical to form an upward extension of said base portion side walls when secured thereto, said inner wall being generally conical and converging upwardly from a lower junction with said outer wall toward an upper junction at said cap portion opening with a radially inwardly extending portion of said outer wall, said inner wall being shaped and dimensioned to be closely spaced from the tapered neck of the bottle, thereby permitting maximum enclosed volume within said annular chamber for a given external diameter of said base portion; and

means for removably securing said cap portion to said base portion.

4,338,796

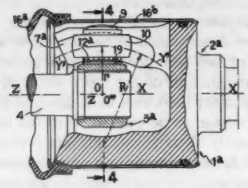
SLIDABLE HOMOKINETIC TRIPOD JOINT AND A CORRESPONDING TRANSMISSION HAVING A FLOATING SHAFT

Michel A. Orain, Conflans Ste Honorine, France, assignor to Glaenzer Spicer, Poissy, France

Filed Mar. 25, 1980, Ser. No. 133,683
Claims priority, application France, Apr. 4, 1979, 79 08452
Int. Cl.³ F16D *3/30*
U.S. Cl. 464—111 **6 Claims**

1. A slidable homokinetic tripod joint comprising a tulip element which defines three raceways having a part-circular cross-sectional shape, a tripod element which has a cylindrical skirt portion for fixing the tripod element to a shaft and three arms which extend radially from the skirt portion, three part-spherical rollers which are respectively freely rotatably and slidably mounted on the three arms, and a needle bearing interposed between each roller and the respective arm, each roller being received in a respective raceway of said raceways and the tripod element being axially free inside the tulip ele-

ment, the raceways of the tulip element having the shape of a torus and the ratio of the maximum distance between the axis



of the tulip element and the axis of the tori defining the raceways to the radius of said tori being between $\frac{1}{4}$ and $\frac{3}{4}$.

4,338,797

TRISHAFT TELESCOPING ASSEMBLY FOR TORQUE TRANSMISSION

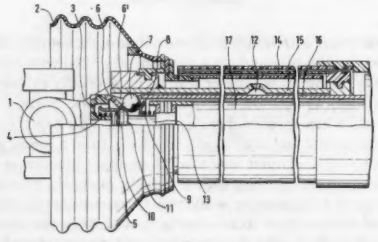
Paul Herchenbach, Ruppichteroth, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Feb. 25, 1980, Ser. No. 124,147

Claims priority, application Fed. Rep. of Germany, Mar. 1, 1979, 2908029

Int. Cl.³ F16D *3/06*

U.S. Cl. 464—167 **6 Claims**



1. A torque transmitting shaft assembly particularly suited for driving agricultural implements comprising: an inner hollow shaft member, an intermediate hollow shaft member and an outer hollow shaft member arranged for telescoping movement relative to each other; aperture means in said intermediate shaft member; interlocking ball means held in said aperture means in radially movable engagement for effecting releasable axial interlocking engagement between said inner, said outer and said intermediate shaft members; stop means having said ball means alternately engaging therein provided on said inner shaft member and said outer shaft member; cover means provided on said intermediate shaft member at an end thereof having said ball means; locking ring means adapted to be moved toward said aperture means by first spring means; conically shaped attachment means including a shaft portion extending axially from a conically shaped head thereof provided at a telescopically innermost end of said inner shaft member; a conical ring member axially movably mounted on said shaft portion; and second spring means biasing said ring member on said shaft portion in a direction toward said conically shaped head; said aperture means being provided at a side thereof with radially inwardly facing oblique surface means; said interlocking ball means having a radially inwardly facing side bearing against said oblique surface means upon locking of said intermediate shaft member relative to said inner shaft member and relative to said intermediate shaft member.

4,338,798

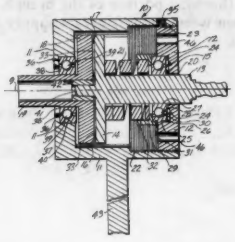
ADJUSTABLE TORQUE LIMITING APPARATUS

Russell A. Gilman, 5241 Village Cir. Dr., Temple City, Calif. 91780

Filed Jun. 5, 1980, Ser. No. 156,658

Int. Cl.³ F16D *7/02*

U.S. Cl. 464—23 **43 Claims**



1. Adjustable torque limiting apparatus comprising:

a housing defining a cylindrical chamber open at one end and substantially closed at the other end;

an adjustable plate covering the open end of the housing, means for adjusting the plate along the central longitudinal axis of the cylindrical chamber;

a first rotatable shaft extending through the adjustable plate into the chamber with its longitudinal axis coincident with that of the chamber;

a first disk having a first frictional circular surface, the disk attached to the end of the first shaft located in the interior of the chamber, the shaft having its central axis coincident with that of the chamber;

a second rotatable shaft extending through the substantially closed end of the housing into the chamber with its longitudinal axis coincident with that of the chamber, the shaft being secured to prevent axial movement out of the chamber;

a second disk having a second circular surface, the disk attached to the end of the second shaft having a central axis coincident with the central axis of the first disk, the first and second frictional surfaces being frictionally coupled; and

means for urging the disk together.

4,338,799

THREAD GUIDANCE SYSTEM

Eugen Eberwein, Leinfelden-Echterdingen; Heinrich Elsässer, Stuttgart; Willi Gaiser, Gäufelden; Eberhard Leins, Filderstadt; Klaus Pape, Reutlingen, and Manfred Walter, Aichtal, all of Fed. Rep. of Germany, assignors to Sulzer Morat GmbH, Fed. Rep. of Germany

Filed Jun. 11, 1980, Ser. No. 158,513

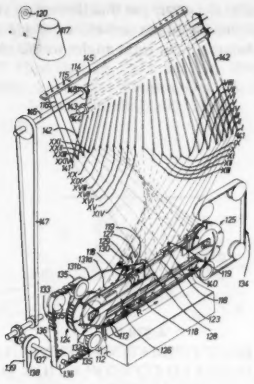
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1979, 2925217

Int. Cl.³ D04B *3/06, 15/52*

U.S. Cl. 66—125 R **9 Claims**

1. Thread guidance system for the feeding of a plurality of threads to a textile machine working the threads, having a plurality of thread carriers running successively on an endless path, the threads being carried from supply spools by movable

thread guides to the thread carriers, and a device being provided for preventing the twisting of the threads, characterized



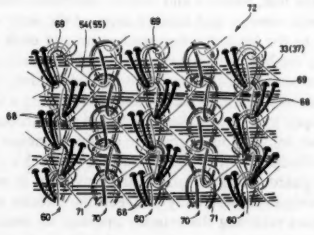
in that the thread guides are movable individually and independently of one another.

4,338,800

VELVET-TYPE FASTENER WEB

Yoshio Matsuda, Nyuzen, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Filed May 8, 1980, Ser. No. 147,760
Claims priority, application Japan, May 9, 1979, 54-56789
Int. Cl.³ D04B *7/12, 9/12, 11/08, 23/08*
U.S. Cl. 66—194 **7 Claims**



1. A velvet-type fastener web comprising:

(a) a knitted ground structure including a first set of threads having stitches constituting wales and courses, and a second set of threads connecting said wales transversely; and

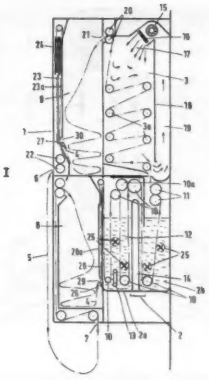
(b) a series of loops of thermoplastic monofilament knitted with said stitches in each of selected wales, each of said loops including a pair of stems projecting from said knitted ground structure at one of said courses and having a pair of locking ends, respectively.

4,338,801

AUTOMATIC TOWEL DISPENSER

Bernd Beitecke, Dortmund, and Reinhold Schmidt, Bochum, both of Fed. Rep. of Germany, assignors to LUK Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Continuation of Ser. No. 50,640, Jun. 21, 1979, abandoned. This application Mar. 18, 1981, Ser. No. 244,901
Claims priority, application Fed. Rep. of Germany, Jun. 21, 1978, 2827218
Int. Cl.³ A47K *10/30*
U.S. Cl. 68—13 R **4 Claims**



1. An automatic dispenser for an endless towel, comprising a housing having a delivery slot and an inlet slot; a washing and a drying chamber provided in said housing and defining first and second portions of an elongated path for the endless towel a cleaned section of which is available for use externally of said housing between said slots and which is movable along said path in a direction from said inlet slot, through said washing chamber, through said drying chamber and to said delivery slot; and means provided in said housing and defining additional portions of said path, including a first supply chamber for variably stacking and looping a plurality of superimposed soiled towel sections between said inlet slot and said washing chamber, a second supply chamber for variably stacking and looping a plurality of superimposed cleaned towel sections between said drying chamber and said delivery slot, said supply chambers having upper portions provided with inlets for admission of the towel sections into their interior from above and lower portions wherein the loops of towel sections begin to form and pile up on top of each other, and first and second unfolding shafts having entry slots respectively communicating with said first and second supply chambers at levels above the respective lower portions and at most halfway between the upper and lower portions of the respective supply chambers, said first shaft being disposed between said first supply chamber and said washing chamber and said second shaft being disposed between said second supply chamber and said delivery slot.

4,338,802

AGITATOR MOUNTED FILTER FOR AN AUTOMATIC WASHER

William Ohmann, St. Joseph Township, Berrien County, and Edward E. Wiessner, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

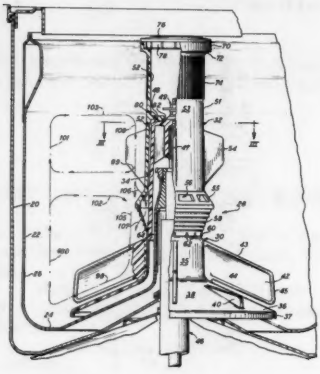
Filed Jun. 27, 1980, Ser. No. 163,585
Int. Cl.³ D06F *13/02*
U.S. Cl. 68—18 FA **10 Claims**

1. In a vertical axis washing machine having a wash receptacle, a drive means and an agitation means within said recepta-

cle driven by said drive means; said agitation means comprising:

an inner oscillatory agitator section having a vertical central hub having an upper portion and including a bottom portion forming a skirt and a plurality of vanes, said vanes mounted adjacent said skirt formed at the bottom of said hub, and

an outer oscillatory agitator section comprising a barrel fitting over said upper portion of said inner agitator hub,



said outer agitator section forming a lower portion and having a conical flange having openings therethrough formed near said lower portion, and an inverted conical section comprising a filter means affixed to said flange, said filter means forming a lower end of said outer agitator section, whereby said vanes impel liquid in said wash receptacle to flow down along the barrel of the outer agitator section, in through said flange openings and out through said filter means to separate filterable substances from said liquid.

4,338,803

SKIVING MACHINE FOR HIDES AND SIMILAR MATERIALS

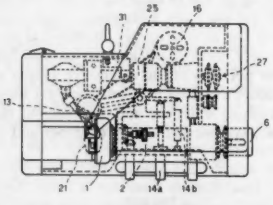
Danilo Paccagnella, Via Oltrebrenta No. 6, Noventa Padovana, Padova, Italy

Filed Jul. 29, 1980, Ser. No. 173,419

Claims priority, application Italy, Jul. 31, 1979, 41605 A/79

Int. Cl.[3] C14B *1/14*; A43B *8/34*

U.S. Cl. 69—16 **8 Claims**



1. A skiving machine for hides and similar materials comprising a dished cutter rotary supported by a horizontal shaft connected to a driving shaft by means of a coupling device capable of permitting axial movement of the shaft of the cutter, the machine comprising more over a feeding roller for material to be skived, close to the cutting edge of the cutter and a device for grinding the cutting edge of said cutter, in which the device connecting the cutter shaft to the driving shaft comprises a first hollow shaft through which one end of the cutter shaft slides, said hollow shaft having at least one longitudinal slot in which slide a pin radially protuding from the extension of the shaft of the cutter, and in which the device for grinding the cutting edge of the cutter comprises a grinding wheel operated by an independent motor and supported by an arm laterally hinged to the cutter, so that the axis of rotation of the grinding wheel moves along an arc of circle tangent to a straight line substantially at right angles to the cutting edge of the cutter.

4,338,804

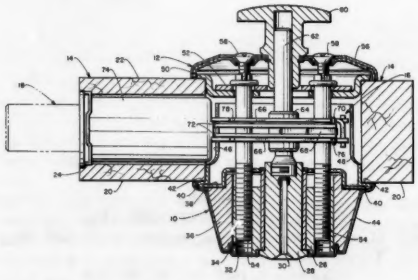
LATCH BOLT OPERATING DEVICE HAVING IMPROVED SHIELD CONSTRUCTION TO DETER PROBE MANIPULATION

Paul G. Solovieff, Tustin, Calif., assignor to Emhart Industries, Inc., Farmington, Conn.

Filed Sep. 26, 1980, Ser. No. 191,279

Int. Cl.[3] E05B *9/04*

U.S. Cl. 70—134 **10 Claims**



1. In a latch construction of the type for mounting in doors and the like with a bolt extendable from a door edge, a latch driving mechanism mounted within the door operably connected to the bolt, exterior and interior operators respectively engaged with exterior and interior faces of the door operably connected to the latch driving mechanism and each operable for moving the bolt between extended and retracted positions through movement of the latch driving mechanism, the exterior operator including a lock cylinder telescoping a lock plug and telescoped by a transversely thickened and hardened metal guard collar, longitudinally reactive abutment means between the lock cylinder and the guard collar for the lock cylinder to retain the guard collar longitudinally inwardly in assembly, fastening means longitudinally between the interior and exterior operators retaining the exterior operator in assembly and through the abutment means the guard collar in assembly; the improvement comprising: a metal shield longitudinally outwardly transversely abutting said guard collar and longitudinally inwardly transversely abutting said door exterior face so that said guard collar is retained in assembly by said lock cylinder and fastening means and said shield is retained in assembly by said guard collar, said shield extending longitudinally inwardly into said door interior at least partially annularly around a portion of said latch driving mechanism shielding said latch driving mechanism portion to deter surreptitious manipulation thereof by penetration through the door exterior face.

4,338,805
LOCK

Lennart Nygren, Smörblommevägen 2B, 73400 Hallstahammar, Sweden

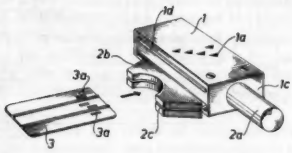
PCT No. PCT/SE79/00208, § 371 Date Jun. 18, 1980, § 102(e) Date May 27, 1980, PCT Pub. No. WO80/00860, PCT Pub. Date May 1, 1981

PCT Filed Oct. 15, 1979, Ser. No. 199,512

Claims priority, application Sweden, Oct. 18, 1978, 7810878

Int. Cl.³ E05B *21/00, 25/00*

U.S. Cl. 70—134 **9 Claims**



1. A lock including a lock casing, a locking mechanism displaceable in said lock casing and connected to a latch bolt, and annular blocking means, which are movable transversally to the displacement direction of the locking mechanism and resiliently loaded towards positions blocking the locking mechanism, the blocking means being adapted be brought to releasing positions by insertion of a card serving as a key and having recesses corresponding to the blocking means, said blocking means being entirely guided in the displaceable locking mechanism and movable between two blocking end positions, in which each blocking means is in locking engagement with the lock casing, and said card belonging to the lock having through-going, elongated slits located and dimensioned to receive arcuate portions of the blocking means, so that upon insertion of the card all the blocking means are brought to intermediate positions permitting the displacement of the locking mechanism.

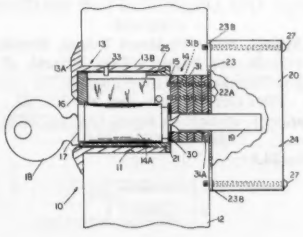
4,338,806
THEFT DETERENT LOCK

Roy L. Cox, Greenville, N.C., assignor to Frank Catricola, New York, N.Y., a part interest

Continuation-in-part of Ser. No. 156,186, Jun. 3, 1979, abandoned. This application Dec. 10, 1980, Ser. No. 215,035

Int. Cl.³ E05B *9/04, 15/16*

U.S. Cl. 70—417 **20 Claims**



1. A theft deterent lock comprising a lock cylinder means having a keyway adapted to be received in a bore extending through a door, a protective sleeve circumbscribing said lock cylinder means, said sleeve having a face plate adapted to extend in the plane of the door, said face plate having an opening therein adapted to be disposed in alignment with the key way of said lock cylinder means, a lock nut connected to the end of said sleeve remote from said face plate for securing said lock cylinder means within said sleeve between said face plate and said lock nut, said sleeve and connected lock nut being free to rotate relative to said lock cylinder means, and means for securing said lock cylinder means to the door within the bore therein whereby said protective sleeve prohibits one from tampering with said lock cylinder means.

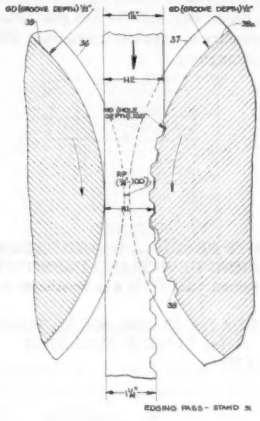
4,338,807
METHOD OF PRODUCING IMPROVED SERRATED FLATS USED IN THE MANUFACTURING OF GRATING

Marion P. Ricono, Kansas City, and Harold D. Bridges, Independence, both of Mo., assignors to Armco Inc., Middletown, Ohio

Filed Aug. 26, 1980, Ser. No. 181,418

Int. Cl.³ B21H *7/00*

U.S. Cl. 72—187 **20 Claims**



1. A method of producing improved finished serrated flats having a predetermined width and thickness which comprises: continuously passing a hot billet of workable metal through a series of rolling stands to form an elongated hot flat; providing an edging pass comprised of a pair of spaced apart edging rolls having aligned, facing grooves, one of said grooves having trapezoidal holes therein; spacing said edging rolls so that the sum of the dimensions of the depth of the grooves and the parting distance of the edging rolls plus the depth of the holes is at least a specified amount less than the predetermined width of the hot flat entering the edging pass, the width of the grooves being at least as great as the thickness of the entering hot flat; and passing said hot flat through the bite of the edging rolls whereby to reduce the hot flat width to that desired in the finished serrated flat while imparting the desired serrations thereto by forcing hot metal to flow into the said trapezoidal holes to the extent necessary to obtain serrations of desired height on said flat.

4,338,808
EAVESTROUGH CORNER BRACKET

Jacob B. Weiss, 270 Bryden Rd., Kelowna, British Columbia, Canada V1X 3Y4

Filed Feb. 25, 1980, Ser. No. 124,317

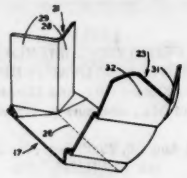
Int. Cl.³ B21D *53/36*

U.S. Cl. 72—379 **6 Claims**

1. A method of folding an eavestrough corner bracket from an elongated bendable sheet strip having a longitudinal axis and inner, central and outer portions adapted to cooperate with corresponding inner, central and outer portions respectively of adjacent mitred ends of eavestroughing intersecting at a corner, the bracket having an intermediate portion disposed between the inner and central portions, the method of forming

a corner adjacent the inner portion of the bracket being characterized by the steps of:

(a) folding the intermediate portion of the strip into a plurality of folds and folding the inner portion about the longitu-

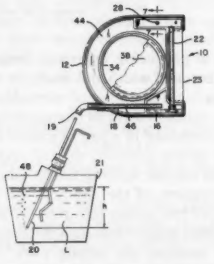


dinal axis to produce corner side portions inclined to each other to define side walls of a corner which is generally complementary to adjacent intersecting inner portions of the eavestroughing.

4,338,809
REMOTE READING, LIQUID PARAMETER MEASURING DEVICE AND IMPROVED PUMP

Richard L. Englund, 1831 127th Ave. Southeast, Bellevue, Wash. 98005

Filed Jun. 23, 1980, Ser. No. 161,657
Int. Cl.³ G01F *25/00, 23/14*
U.S. Cl. 73—1 H **11 Claims**



1. A hand-held, remote, reading, liquid parameter measuring device for measuring liquid in a container, comprising:

means for manually creating a pneumatic pressure;

a manometric measuring sight tube having spaced indicia calibrated to measure the parameter of the liquid to be determined;

a reservoir of gauge liquid connected to a first end of said sight tube for movement into the sight tube upon pneumatic pressurization of the reservoir;

means coupling the opposite second end of the sight tube to a pressure atmosphere equal to the atmosphere over the measured liquid in the container;

pressure tube means coupling the gauge liquid reservoir and the measured liquid to said pressure-creating means;

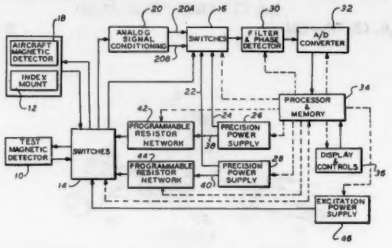
means for preventing loss of gauge liquid from said gauge liquid reservoir due to orientation in all directions of said measuring device in use; and

means for rendering the sight tube inoperative when the device is tilted in all directions more than a predetermined angle to prevent substantial erroneous measurements.

4,338,810
CALIBRATOR FOR A MAGNETIC AZIMUTH DETECTOR

Bernard P. Gollomp, Far Rockaway, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sep. 29, 1980, Ser. No. 191,988
Int. Cl.³ G01C *17/38*
U.S. Cl. 73—1 E **15 Claims**



1. A calibrator for calibrating a service detector means of a craft, said service detector means being responsive to the magnetic field of the earth to provide a service heading signal, said service detector means being operable without said calibrator, said calibrator comprising:

a test detector means for providing a test heading signal signifying the magnetic orientation of said test detector means with respect to the prevailing magnetic field of the earth;

turntable means adapted to rotatably support said service detector means; and

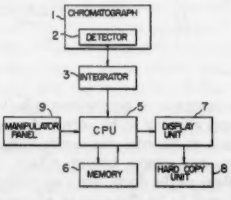
calibration means connected to said test detector means and responsive to said test heading signal, said calibration means being operable to determine the variation in said test heading signal due to changes in the magnetic field of the earth, said calibration means being operable to connect to said service detector means and determine the difference in said service heading signal when said craft is adjacent to and removed from said service detector means, said calibration means including:

memory means operable to connect to said service detector means for storing a succession of values of said service heading signal.

4,338,811
METHOD AND APPARATUS FOR DIAGNOSIS OF DISEASE

Hiroyuki Miyagi, Mito; Yoshinori Takata, Ibaraki; Junkichi Miura, Hitachi, and Mamoru Taki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 29, 1980, Ser. No. 201,723
Claims priority, application Japan, Oct. 30, 1979, 54-140613
Int. Cl.³ G01N *33/50*
U.S. Cl. 73—23.1 **10 Claims**



1. A method of diagnosing a disease of a subject by analyzing substances of a body fluid of the subject by means of chroma-

tography and examining a chromatogram thus obtained, the method comprising the steps of:

separating and detecting the substances in the body fluid of the subject to obtain a chromatogram including peaks corresponding to the individual substances;

integrating the individual peaks in the chromatogram of the subject;

forming a two-dimensional pattern diagram representing the relation between the integrated values of the peaks and the retention times in the chromatogram of the subject;

forming a two-dimensional upper limit pattern diagram and a lower limit pattern diagram relating to normal persons on the basis of previously stored data of the upper and lower limits of integrated values of peaks and the retention times in chromatograms obtained by separating and detecting the substances in a body fluid of normal persons;

judging the possibility of abnormality by comparing geographically the pattern diagram of the subject with the upper limit and lower limit pattern diagrams of the normal persons;

retrieving, when the result of judgment proves that the subject is abnormal, data corresponding to predetermined items of retrieval from a previously prepared file of data classified by diseases, said disease-classified data including upper and lower limits and mean values of integrated values of peaks and retention times in chromatograms obtained through separating and detecting substances of a body fluid of abnormal patients classified by diseases;

forming two-dimensional upper limit pattern diagrams and two-dimensional lower limit pattern diagrams of diseases on the basis of the upper and lower limits of the integrated values of peaks and the retention times in the retrieved data; and

selecting at least one disease having the pattern diagrams at least analogous to the pattern diagram of the subject by comparing geographically the pattern diagram of the subject with the upper limit and lower limit pattern diagrams of diseases.

4,338,812

SAFETY APPARATUS FOR AUTOMATIC SUPERVISION AND CONTROL OF A PRESSURE FLUID SYSTEM

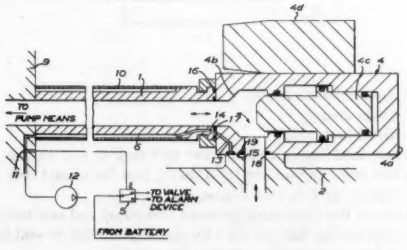
Kenneth B. Lindgren, Borlänge, Sweden, assignor to Verkstadsproduktion I Borlänge AB, Borlänge, Sweden

Continuation of Ser. No. 967,325, Dec. 7, 1978, abandoned. This application Dec. 17, 1980, Ser. No. 217,331

Claims priority, application Sweden, Dec. 9, 1977, 7714015

Int. Cl.³ G01M *3/02*

U.S. Cl. 73—40.5 R **3 Claims**



1. A safety apparatus for automatic leakage supervision in a system which includes a first and second member, said members each having a planar contact surface and a first fluid conducting passage which intersects this surface to form an opening therein, said members being sealingly interconnected such that their first fluid conducting passages are in communication with one another with said contact surfaces abutting against each other to form therebetween a contact zone which surrounds the openings, said first and second members each also having a second passage which leads to the contact zone and is separate from the respective first passage, said second passages each extending along the entire length of the first passage in the respective member, means being provided for maintaining a predetermined fluid pressure in the second passage, and detector means being provided for detecting whether the pressure in the second passage deviates from the predetermined pressure whereby pressure deviations sensed by the detector will indicate leakage in the contact zone.

4,338,813

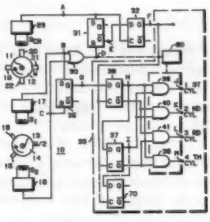
ELECTRONIC ENGINE SYNCHRONIZATION AND TIMING APPARATUS

Roy E. Hunninghaus, Des Plaines, and Randy L. Bolinger, Schaumburg, both of Ill., assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 2, 1980, Ser. No. 183,657

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—116 **17 Claims**



1. An electronic engine synchronization and timing circuit comprising:

an engine crankshaft driven by an engine at variable speeds and providing cyclic driving movement for engine cylinder pistons;

a crankshaft body rotated by the crankshaft about an axis and having a plurality of peripheral portions spaced about said axis;

crankshaft sensor means positioned stationary about said crankshaft body for sensing the rotational position of the crankshaft body and developing, in response to the passage of said peripheral portions of said crankshaft body, a crankshaft reference signal having alternating positive and negative logic states with state transitions of predetermined polarities at predetermined rotational positions of the engine crankshaft;

an engine camshaft rotated at one half of the rotational speed of the engine crankshaft;

a camshaft body rotated about an axis by the camshaft and having a plurality of spaced apart peripheral portions positioned within less than 180 degrees of angular rotation about said axis;

at least a first stationary camshaft sensor means positioned about the camshaft body for sensing the rotational position of the camshaft body peripheral portions and providing in response thereto camshaft sensor signal pulses whose occurrence is related to predetermined camshaft positions; and

circuitry means for receiving both said crankshaft reference signal and said camshaft signal pulses and providing at least one cylinder identification reference signal indicative of one particular camshaft rotational position by distinguishing between the various camshaft signal pulses by determining if said camshaft signal pulses occur during two sequential identical polarity states of said crankshaft reference signal, whereby said crankshaft reference signal is utilized not only to provide precise signal transitions related to specific rotational positions of the engine crankshaft, but is also utilized in identifying a specific camshaft reference rotational position.

4,338,814
DEVICE FOR MEASURING THE MASS OF A FLOWING MEDIUM

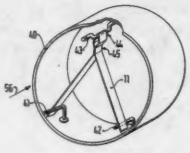
Peter Romann, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 27, 1980, Ser. No. 200,722

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1979, 2947856

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—118 **9 Claims**



1. A device for measuring the mass of a flowing medium, comprising a temperature-dependent resistor disposed in the flowing medium and a control means for controlling the temperature and resistance of the temperature-dependent resistor in closed-loop fashion in accordance with the mass of the flowing medium, a control variable of the control means being a standard for the mass of the flowing medium, wherein:

said temperature-dependent resistor is embodied as a band having two wide faces and two narrow faces extending between opposite ends of the band;

the device further comprises a sensor ring having a plurality of band support points positioned there, the support points including two terminal support points and an intermediate support point located between the two terminal support points;

the band is disposed within the sensor ring and is guided from one end of the band to the other end of the band over the plurality of support points; and

the guidance of the band is effected on the intermediate support point by a loop of the band, said band including portions extending away from the intermediate support point, and being connected in an electrically conductive manner with one another in a contact area of said band, the band being disposed in the flowing medium in such a manner that one of the narrow faces of the band performs as an exposed face disposed counter to the flow of the medium while the wide faces of the band extend substantially in the flow direction.

4,338,815
INDUCTIVE DISPLACEMENT TRANSDUCER

Klaus-Jürgen Peters, Affalterbach; Franz-Ulrich Bosch, Stuttgart; Herbert Schindler, Hemmingen, and Hermann Nusser, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

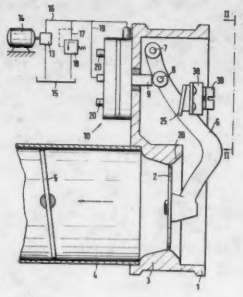
Filed Nov. 14, 1980, Ser. No. 207,054

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951648

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—118 **7 Claims**

1. An inductive displacement transducer for conversion of a mechanical movement into an electrical signal which in accordance with an arbitrarily predeterminable function depends on the movement of the object to be measured, in particular an air flow rate meter disposed in the intake tube of an internal combustion engine comprising at least one magnetic coil of ferromagnetic material disposed on a core, the inductivity of which magnetic coil is variable by means of a short-circuit ring displaceable on the core in accordance with the movement of the object to be measured, the core of the displacement transducer being made up of two E-shaped sets of arms disposed symmetrically relative to one another, one arm of which set acts as the measuring arm set, the middle arm of which is surrounded on one end by a measuring magnetic coil and on the other end by a measuring short-circuit ring connected with the object to be measured and the other arm set acts as the reference arm set, the middle arm of which is surrounded on one end by a reference magnetic coil and on the other end by a fixed reference short-circuit ring.



4,338,816
FUEL-CONSUMPTION MONITOR FOR DIESEL ENGINE

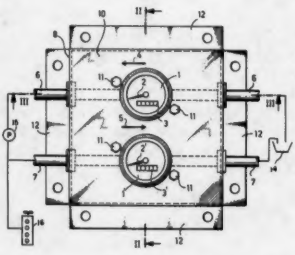
Georg Neff, Munich, Fed. Rep. of Germany, assignor to E. Gunter Bernstorf, Sinsheim, Fed. Rep. of Germany

Filed Jul. 15, 1980, Ser. No. 169,143

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929045

Int. Cl.³ G01F *9/00*

U.S. Cl. 73—119 A **6 Claims**



1. In combination with

a diesel engine,

a diesel-fuel tank,

a fuel-feed line extending from said tank to said engine,

a fuel pump in said line for drawing fuel out of said tank and supplying it to said engine, and

a return line connected between said pump and said tank for conducting fuel not used by said engine back to said tank,

a fuel-consumption monitor comprising:

a housing;

a feed flowmeter upstream of said pump in said feed line in said housing for measuring flow in said feed line;

a return flowmeter in said return line in said housing for measuring flow in said return line, whereby the difference between the two measured flows constitutes the fuel consumed by said engine, said housing substantially surrounding said meters and having a wall on which both of said meters are mounted; and

means connected to both of said meters for calculating the

difference between said flows and including a display mounted on said wall of said housing for displaying said difference.

4,338,817

HYDROMETER WITH IMPROVED TEMPERATURE COMPENSATION

George E. Callahan, Feldstrasse 34, 4000 Dusseldorf 30, Fed. Rep. of Germany

Filed May 2, 1980, Ser. No. 145,889
Int. Cl.³ G01N *9/12*
U.S. Cl. 73—448 **3 Claims**

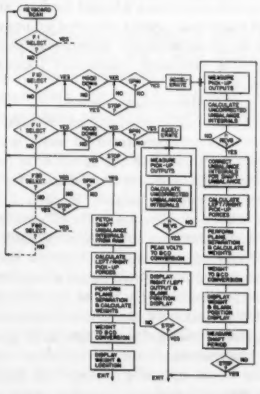
1. A hydrometer for measuring the density of a fluid having a density within a predetermined range and a coefficient of thermal expansion that varies within this range, comprising a lower body volume V_a which is equal to the total mass of the hydrometer divided by the density of said fluid at the highest part of said range, and an intermediate scale volume V_b which together with said volume V_a is equal to the total mass of the hydrometer divided by the density of said fluid at the lowest part of said range, and an upper stem volume V_c, whereby said volume V_a is comprised of one or more materials so proportioned that the coefficient of thermal expansion of said volume V_a is approximately equal to that of the fluid at the highest part of said range, and said volume V_b is comprised of one or more materials so proportioned that the coefficient of thermal expansion of the combined said volumes V_a and V_b is approximately equal to that of said fluid at the lowest part of said range.

4,338,818

METHOD FOR DETERMINING ERROR SOURCES IN A WHEEL BALANCER

Jerry M. Hill, North Little Rock, and Ronald W. Carter, Conway, both of Ark., assignors to FMC Corporation, Chicago, Ill.

Filed Jul. 28, 1980, Ser. No. 172,724
Int. Cl.³ G01M *1/22*
U.S. Cl. 73—462 **30 Claims**



1. A method of detecting errors affecting measurement of wheel unbalance compensation weights taken in a wheel balancer having a rotatable wheel mounting shaft supported in a framework, a wheel mount on the shaft formed to accept a wheel for attachment thereto, a motor coupled to drive the shaft rotationally, left and right force transducers mounted between the framework and the shaft so that they detect mass unbalance in the shaft and in structure secured to the wheel mount during shaft rotation, a display, a processor operating to monitor output from the force transducers, to control the motor and to provide signals coupled to the display indicative of unbalance compensation magnitude and location, and memory associated with the processor operating to store unloaded shaft unbalance and force transducer calibration data, comprising the steps of

accelerating the shaft to assume a continuous speed within a predetermined speed range,

measuring the force transducer outputs,

calculating uncorrected unbalance integrals from the force transducer outputs,

correcting the unbalance integrals with the unloaded shaft unbalance data,

calculating the forces at the left and right transducers from the corrected unbalance integrals and the stored calibration data for a predetermined number of shaft revolutions,

calculating the unbalance compensation weights using a set of arbitrary wheel parameters and the corrected unbalance integrals obtained over the predetermined number of shaft revolutions,

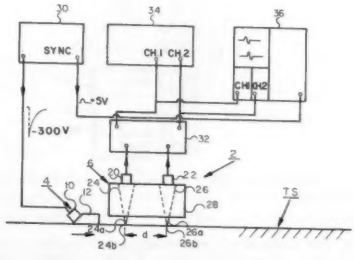
and repeating all of the foregoing steps after each completion of the predetermined number of shaft revolutions, whereby a series of compensation weight values is obtained and the stability of the system may be observed.

4,338,819

ACCELEROMETER INCLUDING AN OVERALL ARRANGEMENT FOR REDUCING TEMPERATURE RELATED ERRORS

Richard D. Marquess, Concord, Calif., assignor to Systron-Donner Corporation, Concord, Calif.

Filed Sep. 8, 1980, Ser. No. 185,246
Int. Cl.³ G01P *15/13*
U.S. Cl. 73—497 **7 Claims**



1. In a pendulous type of accelerometer apparatus, a closed housing, a magnetic circuit arrangement located within said housing for the purpose of providing a magnetic field having a given constant flux density in a given area within said housing, means including a pendulous member mounted for pivotal movement within said housing and having a current carrying torque coil located within and responsive to said magnetic field for producing an electrical output signal corresponding to the acceleration to which said apparatus is subjected, said magnetic circuit arrangement containing temperature sensitive magnetic material which is sufficient to cause the flux density within said magnetic field to vary inversely with changes in temperature within said closed housing and thereby introduce a temperature related error into said electrical output signal

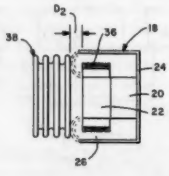
such that the latter does not correspond to said acceleration, and temperature compensating means for reducing said temperature related error, said compensating means including means for reducing the amount of change in flux density of said magnetic field as a result of said temperature changes so as to provide said temperature related error reduction said change in flux density reducing means including flux leakage means located within said housing and acting on said magnetic circuit arrangement for causing a constant amount of flux to leak from said magnetic field when the latter displays said given flux density at a corresponding temperature within said chamber, said flux leakage means varying the amount of flux which leaks from said field in response to and inversely with said temperature changes for providing said reduction in the amount of change in flux density of said magnetic field caused by said temperature changes, said flux leakage means including a flux conductive plate-like member located in spaced relationship with said magnetic circuit arrangement, and means supporting said member such that the spacing between the latter and said magnetic circuit arrangement varies directly with said temperature changes so as to provide said varying amount of flux leakage, said plate-like member and supporting means together forming a bellows which expands with decreases in said temperature changes and contracts with increases in said temperature changes, said housing being a sealed housing containing oil which surrounds said pendulous member, magnetic circuit arrangement and said bellows, said oil being of a type which changes in volume directly with said temperature changes, said bellows expanding with and as a result of decreases in said oil volume and contracting with and as a result of increases in said oil volume whereby to provide said spacing variation and to compensate for said changes in volume.

4,338,820

METHOD AND APPARATUS FOR GENERATING AND DETECTING ACOUSTIC SURFACE WAVES PARTICULARLY USEFUL IN THE NON-DESTRUCTIVE TESTING OF MATERIALS

Kenneth Jassby, and Aaron Zeiger, both of Herzlia, Israel, assignors to Ramot University Authority for Applied Research & Industrial Development, Tel Aviv, Israel

Filed Sep. 25, 1980, Ser. No. 190,616
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—597 **21 Claims**



1. The method of generating and detecting an acoustic surface wave particularly useful in the nondestructive testing of materials by measuring the velocity of an acoustic surface wave through a test sample, characterized in that:

(a) the acoustic surface wave is generated by a generator transducer coupled to the test sample such as to cause the generation of an acoustic surface wave therealong; and

(b) the acoustic surface wave is detected by detector means including two pick-up transducers each coupled to the surface of the test sample by a coupling device having a narrow end in contact with the surface of the test sample and its longitudinal axis perpendicular thereto such that said narrow end detects the shear component of the acoustic surface wave and generates a bulk wave which travels longitudinally through the coupling device, away from its narrow end, to the pick-up transducer, the narrow ends of the two coupling devices contacting the surface of the test sample being spaced from each other a predetermined distance in the direction of travel of the acoustic surface wave therealong.

8. Apparatus particularly useful for generating and detecting acoustic surface waves for the nondestructive testing of materials, comprising:

(a) generator means including a generator transducer, and a generator coupling device for coupling same to a test sample such as to cause the generation of an acoustic surface wave therealong; and

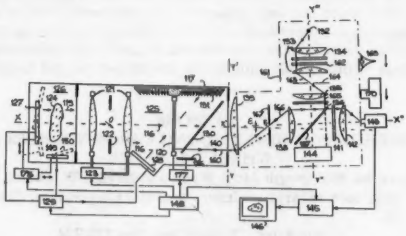
(b) detector means including two pick-up transducers and two coupling devices, each coupling one of said transducers to the surface of the test sample, each of said pick-up coupling devices being disposed such as to have a narrow end exposed for contact with the test sample and its longitudinal axis perpendicular to said surface such that said narrow end is effective to detect the shear component of the acoustic surface wave and to generate a bulk wave which travels longitudinally through the coupling device, away from its narrow end, to the pick-up transducer, the narrow ends of the two coupling devices contacting the surface of the test sample being spaced from each other a predetermined distance in the direction of travel of the acoustic surface wave therealong.

4,338,821

LIQUID CRYSTAL CELL FOR ACOUSTICAL IMAGING

Jean-Luc Dion, 3760 rue Montpellier, Trois-Rivieres Ouest, Quebec, Canada G8Y 3P2

Filed Oct. 12, 1979, Ser. No. 84,087
Claims priority, application Canada, Oct. 13, 1978, 313460
Int. Cl.³ G01N *29/00*; G02F *1/11*
U.S. Cl. 73—603 **12 Claims**



1. Apparatus for acoustic imaging of an object, comprising:

a main enclosure subdivided into a first and a second compartment, each containing a liquid medium allowing propagation of ultrasonic waves, the said compartments being separated by an acoustically transparent membrane;

a first large area ultrasonic transducer located in the first compartment;

a first system of hydro-acoustic lenses;

an acoustic-optical cell comprising an oriented liquid crystal layer, contained between stratified walls having an acoustic impedance matched to the acoustic impedance of the propagation media adjacent to said walls for widely varying values of incidence angles, in such a way that the ultrasonic waves incident on said cell pass freely through said cell with minimum reflections on said walls of said cell, so producing maximum interaction with said liquid crystal, the molecules of said liquid crystal being induced to reorient perpendicularly to the acoustic displacement, the initial orientation of said molecules being preferably perpendicular to said walls, at least one of said walls being optically transparent,

a plate made of an optically transparent and acoustically reflecting material; and

an optical exit window, all located inside the second com-

partment and disposed along the same principal axis passing through the acoustically transparent membrane;

an optical system to produce and send a light beam on the liquid crystal cell; and

an acoustic absorber located inside the second compartment, but away from the principal axis, said absorber being placed so as to absorb the ultrasonic waves coming from the first compartment into which is placed the object to be visualized and being reflected by said acoustically reflecting plate which is for this purpose at an angle relative to the principal axis, the diopter or exit window being used to see the acoustic image,

wherein is comprised a second large area ultrasonic transducer, laterally located away from the principal axis, between the first lens system and the said liquid crystal cell, the said second transducer being placed in such a way as to emit a plane acoustic wave toward the said cell, a fraction of this obliquely emitted wave passing through the cell and being absorbed by the acoustic absorber which also receives the waves coming the first compartment, another fraction of this obliquely emitted wave being reflected on said cell and also absorbed by the acoustic absorber which extends on both sides of said cell, said second transducer being excited by the same generator than the first transducer.

5. An acousto-optical cell, comprising an oriented nematic liquid crystal layer contained between multilayered walls, at least one of said walls being comprised of two rigid plates having substantially the same thickness, said plates being separated by a different material having a substantially lower acoustic impedance than the plates, said cell achieving good acoustic impedance matching with an adjacent propagation medium for widely varying angles of incidence of the acoustic energy.

4,338,822

METHOD AND APPARATUS FOR NON-CONTACT ULTRASONIC FLAW DETECTION

Hisao Yamaguchi, Akashi, and Kazuo Fujisawa, Nishinomiya, both of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

PCT No. PCT/JP79/00151, § 371 Date Jan. 22, 1980, § 102(e) Date Jan. 22, 1980, PCT Pub. No. WO80/00099, PCT Pub. Date Jan. 24, 1980

PCT Filed Jun. 13, 1979, Ser. No. 191,338

Claims priority, application Japan, Jun. 20, 1978, 53/75016; Sep. 22, 1978, 53/117089

Int. Cl.³ G01N *29/04*

U.S. Cl. 73—643 **7 Claims**

2. An apparatus for non-contact ultrasonic flaw detection, comprising:

a laser beam generator for emitting a pulsed laser beam;

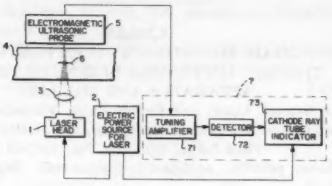
a plurality of half-mirrors and a total reflection mirror disposed substantially in parallel with one another in the path of the laser beam generated by said laser beam generator so as to intersect said laser beam substantially at equal angles;

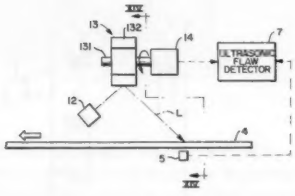
a plurality of rotary mirrors disposed in the paths of the portions of the laser beam reflected by said mirrors, respectively, and having driving means connected thereto for changing the angles of the reflecting surfaces of the rotary mirrors relative to the material to be inspected;

a plurality of electromagnetic ultrasonic probes for a plurality of propagation modes, disposed close to the surface of the material to be inspected and each consisting of a static magnetic field forming member and a detector coil;

a timing signal generator for generating a pulse signal in operative association with the movement of said rotary mirrors;

a scanning control device connected to said probes and said timing signal generator for controlling the turning on-and-off of said electromagnetic ultrasonic probes in response to said pulse signal; and





a flaw detector connected to said probes for receiving signals from said probes and displaying the results of the flaw detection.

4,338,823

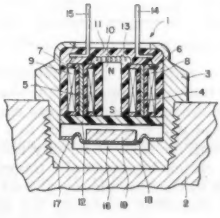
VIBRATION SENSOR

Shinichiro Iwasaki, Auburn Heights, Mich., assignor to Aisin Seiki Company, Ltd., Kariya, Japan

Filed Aug. 29, 1980, Ser. No. 182,701

Int. Cl.³ G01H *11/00*

U.S. Cl. 73—654 **5 Claims**



1. A vibration sensor arrangement which comprises:

a body means mounted on a structural block susceptible to vibrations and adapted to vibrate with the structural block;

resilient means disposed within said body;

a ferromagnetic material member mounted on said resilient means and adapted to have a relative displacement caused by the vibrations of said body;

permanent magnet means and at least one magnetically soft core means disposed adjacent to the range of the relative displacement of said ferromagnetic material member;

an electrical coil wound around said magnetically soft core means; and

detection means for applying a predetermined pulse voltage to said electrical coil to saturate said core means and for detecting changes in the external magnetic field strength provided by said permanent magnet means acting on said magnetically soft core means according to changes in the relative position of said ferromagnetic material member, comprising means for producing an output signal indica-

tive of said vibrations based on the time between application of said pulse voltage and saturation of said core means.

4,338,824

METHOD OF ADJUSTING A GIVEN PRETENSION IN THREADS ON TENSILE STRENGTH TESTING APPARATUS AND THE LIKE

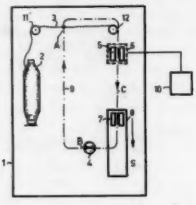
Peter Brassel, Uster, and Rudolf Zingg, Duebendorf, both of Switzerland, assignors to Zellweger, Ltd., Uster, Switzerland

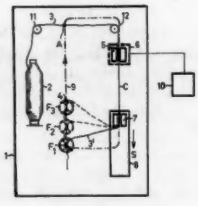
Filed Jul. 1, 1980, Ser. No. 164,941

Claims priority, application Switzerland, Sep. 21, 1979, 8546/79

Int. Cl.³ G01N *3/08*

U.S. Cl. 73—828 **5 Claims**





1. A method of adjusting a given pretension in threads on a tensile strength testing apparatus and the like having a thread insertion mechanism and a pair of thread clamps for securing the thread, one of which is connected to a force measuring device, comprising the steps of initially inserting the thread into the thread clamps by means of a transport clamp in the thread insertion mechanism, closing at least said one of the thread clamps, thereafter measuring the initial tension by means of the force measuring device and then applying a given pretension to the thread based on the measured initial tension by moving the thread clamps relative to each other.

4,338,825

STRAIN GAGE LOAD CELL

Kish Amlani, Troy; Frederick J. Zink, Detroit; Craig Morgan, Novi, and Thomas Ellwood, Mt. Clemens, all of Mich., assignors to Eaton Corporation, Cleveland, Ohio

Filed Oct. 15, 1980, Ser. No. 197,369

Int. Cl.³ G01L *1/22*

U.S. Cl. 73—862.65 **7 Claims**

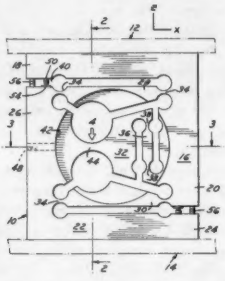
1. In a load cell of the type which measures forces along and parallel to a first axis, comprising:

a substantially rigid force input structure to which the force to be measured is applied;

a substantially rigid force output structure adapted to be supported on a stationary reaction surface;

said force input and force output structures being in the form of oppositely oriented generally L-shaped structures, a first leg of said force input structure receiving the force to be measured and a first leg of said force output structure engaging the reaction surface, said first two legs being generally parallel to each other and at right angles to the first axis, the second legs of each of said structures being generally parallel to each other and to the first axis,

said force input and output structures being normally spaced from each other and interconnected for resilient relative movement in the direction of the first axis by resilient means including upper and lower flexure beams which are parallel to and between said first legs, said force input and output structures and said flexure beams defining a resilient parallelogram linkage lying in a plane parallel to the first axis, said flexure beams and their end connections being dimensioned and proportioned to be resilient to a relatively large degree to forces parallel to the first axis,



while being relatively stiffer to forces in all other directions;

said resilient means further including a sensing beam located between and parallel to said flexure beams, one end of said sensing beam being rigidly connected to said second leg of said force output structure and the other end of said sensing beam being connected to said second leg of said force input structure by a connection which is relatively flexible to the forces parallel to the axis of said sensing beam but which is substantially rigid to forces in the direction of the first axis;

said sensing beam being provided with strain gages which produce a signal responsive to the bending of said beam induced by forces applied to the load cell in a direction parallel to the first axis.

4,338,826

SAMPLING APPARATUS

Marvin Jacoby; Stuart W. Jacoby; Robert E. Jacoby, and Robert A. Ellson, all of Rochester, N.Y., assignors to Air Test Labs, Inc., Rochester, N.Y.

Filed Sep. 11, 1980, Ser. No. 186,168

Int. Cl.³ G01N *1/24*

U.S. Cl. 73—864.62 **18 Claims**

1. An improved apparatus for the collection of atmospheric samples comprising:

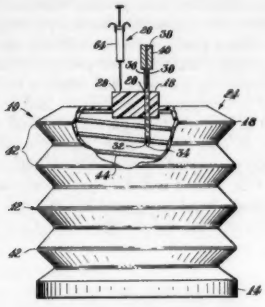
a sealed manually collapsible receptacle including a hollow body comprising base and top elements and side walls, at least said side walls comprising a flexible thermoplastic or elasteromeric material sufficiently flexible to allow easy manual compression;

venting means for the controlled introduction of the atmosphere surrounding said apparatus into said receptacle;

said venting mean comprising one or more resilient penetrable septum members fixedly attached and sealed to said receptacle, and

a hollow needle member having an aperture proximate its sharpened tip, said hollow needle member being insertable through said septum whereby gaseous atmosphere may pass into said receptacle; and

actuating means for automatically, controllably and progressively expanding said receptacle after the compression thereof, said expansion thereby creating a vacuum in said receptacle, said controlled expansion being effective to



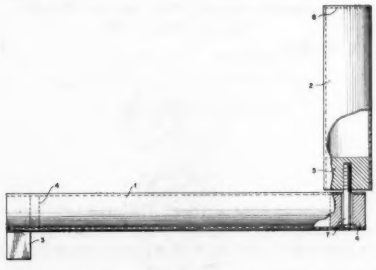
aspirate a measured volume of atmosphere per unit of time through said venting means and into said receptacle; and sample removal means for permitting the withdrawal of a desired quantity of said retained atmosphere from within said receptacle, as required.

4,338,827

FLOATING MARINE WINCH HANDLE

Rachael Hooker, 1312 N. Harper, W. Hollywood, Calif. 90046

Filed Apr. 24, 1978, Ser. No. 899,359
Int. Cl.³ G05G *1/00*; B62D *1/06*
U.S. Cl. 74—545 **1 Claim**



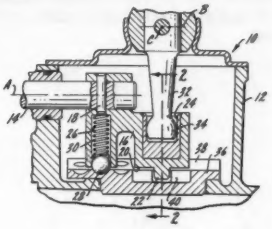
1. A hollow laminated plastic three piece winch handle consisting of a hollowed tubular body, a hollowed tubular grip and a solid socket head; the socket head and body being bonded together; the grip being connected to the body by a stainless steel bolt and allowed to rotate freely; the design of the winch handle being at basic right angles ninety degrees apart, the body, head and grip being offset and perpendicular to one another; solid laminated plastic plugs being bonded into the ends of the hollowed tubes of the body and grip to create sealed air spaces; wherein the improvement comprises a winch handle that is bouyant; this bouyancy rendering the winch retrievable when dropped into deep water in that the design utilizes a thin tubular wall design that displaces its weight in water causing the winch handle to float; and the thin walled tubular handle to float; and the thin walled tubular design giving the winch handle maximum strength when used in conjunction with sailboat winches.

4,338,828

TRANSMISSION SHIFT CONTROL GUIDE AND DETENT APPARATUS

Harold W. Ruhlman, Muncie, Ind., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed May 21, 1980, Ser. No. 152,067
Int. Cl.³ G05G *5/06*
U.S. Cl. 74—475 **4 Claims**



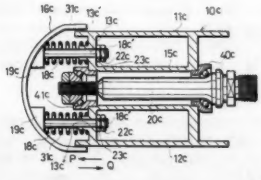
1. In apparatus for selectively engaging a plurality of gear sets in a manual transmission, said apparatus including a shift rail rotatable on and slidable along an axis, a shift lever secured to said rail, and a shift stick coupled with said lever, said stick being movable to a plurality of positions in one plane for effecting rotation of said lever and rail and movable to a plurality of positions in another plane for effecting sliding of said lever and rail; the improvement comprising a fixed plate member having a surface of partial cylindrical configuration about said axis, said plate member defining a track and a plurality of partially spherical depressions spaced therefrom in said surface, a pin projecting from said lever into engagement with said track, and a spring-loaded ball projecting from said lever for individual engagement with said depressions upon movement of said stick, said pin and track being constructed and arranged to define the path of movement of said stick in said planes, said ball and depressions being constructed and arranged to develop individually predetermined detent forces tending to resist movement of said stick to selected ones of said positions.

4,338,829

BICYCLE PEDAL

Nobuo Ozaki, Osaka, Japan, assignor to Maeda Industries, Ltd., Osaka, Japan

Filed Nov. 21, 1979, Ser. No. 96,320
Claims priority, application Japan, Nov. 24, 1978, 53-145513; Nov. 24, 1978, 53-162158[U]
Int. Cl.³ G05G *1/14*
U.S. Cl. 74—594.4 **6 Claims**



1. A bicycle pedal comprising
a pedal spindle connected to a bicycle crank,
a pedal body rotatably supported by said pedal spindle,
said pedal body having a cross plate,
a front end plate in the form of a separate piece from said pedal body being disposed adjacent said pedal body, and
at least one spring member interposed between said cross

plate and said front end plate so as to urge said front end plate axially forwardly.

4,338,830

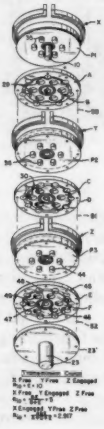
SUBTRACTIVE AND ADDITIVE DIFFERENTIAL GEAR REDUCTION SYSTEM

Keith S. Rodaway, 2636 28th St., Santa Monica, Calif. 90405

Division of Ser. No. 90,669, Nov. 2, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,861

Int. Cl.[3] **F16H** *57/10, 1/28*

U.S. Cl. 74—764 **1 Claim**



1. A gear reduction system including, in combination:

(a) an input shaft;

(b) a first ring having A teeth on its inner circumference;

(c) a first eccentric wheel having B teeth for successively engaging said A teeth when rolling around said inner circumference, said first eccentric wheel having a first center bearing with a first eccentric shaft receiving opening receiving said input shaft and having first pin receiving openings equally radially spaced from said first center bearing;

(d) a second eccentric wheel having C teeth and a second center bearing with a second eccentric shaft receiving opening receiving said input shaft and having second pin receiving openings equally radially spaced from said second center bearing, said second eccentric wheel having its eccentricity off-set from the eccentricity of said first eccentric wheel to provide for dynamic balancing of the wheels when eccentrically moved by said input shaft;

(e) a second ring having D teeth on its inner circumference for successively engaging said C teeth when said second eccentric wheel is rolling around said inner circumference of said second ring;

(f) pin carrier means cooperating with said first and second pin receiving openings of said first and second eccentric wheels;

(g) an output shaft; and

(h) means interconnecting selected one of said first and second eccentric wheels, first and second rings, said pin carrier means and said output shaft in a given arrangement such that a desired ratio R_{io} of the number of input shaft rotations to the number of output shaft rotations is provided, R_{io} being negative if the output shaft rotations are in a direction opposite to the input shaft rotations and positive if the output shaft rotations are in the same direction as the input shaft rotations, said pin carrier means including a first pin carrier having first pins, a second pin carrier having second pins, and a third pin carrier having third pins, there being provided a third ring having E teeth on its inner circumference, and a third eccentric wheel having F teeth and a third center bearing with a third eccentric shaft receiving opening off-set with respect to said first and second eccentric shaft receiving openings to provide for dynamic balancing of all three of the eccentric wheels when eccentrically moved by said input shaft, said given arrangement being such that when said first pins are received in said first pin receiving opening, said second pins are received in said second pin receiving openings, and said third pins are received in said third pin receiving openings; and wherein said first ring is connected to said second pin carrier, said second ring is connected to said third pin carrier, and said third ring is connected to said output shaft; first, second, and third brake bands positioned respectively to engage and disengage said first, second and third pin carriers so that when said third brake band is engaged and said first and second brake bands are free and A—B=1, D—C=1,E—F=1;

$$R_{io}=E;$$

and when said second brake band is engaged and said first and third brake bands are free

$$R_{io}=\frac{DE}{E+D};$$

and when said first brake band is engaged and said second and third brake bands are free

$$R_{io}=\frac{ADE}{A+D+E}$$

whereby a variable speed transmission system is provided.

4,338,831

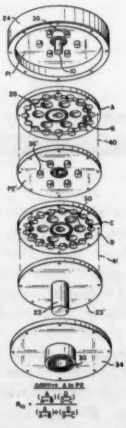
SUBTRACTIVE AND ADDITIVE DIFFERENTIAL GEAR REDUCTION SYSTEM

Keith S. Rodaway, 2636 28th St., Santa Monica, Calif. 90405

Division of Ser. No. 90,669, Nov. 2, 1979, abandoned. This application Aug. 24, 1981, Ser. No. 295,853

Int. Cl.[3] **F16H** *1/28*

U.S. Cl. 74—805 **1 Claim**



1. A gear reduction system including, in combination:

(a) an input shaft;

(b) a first ring having A teeth on its inner circumference;

(c) a first eccentric wheel having B teeth for successively engaging said A teeth when rolling around said inner

circumference, said first eccentric wheel having a first center bearing with a first eccentric shaft receiving opening receiving said input shaft and having first pin receiving openings equally radially spaced from said first center bearing;

(d) a second eccentric wheel having C teeth and a second center bearing with a second eccentric shaft receiving opening receiving said input shaft and having second pin receiving openings equally radially spaced from said second center bearing, said second eccentric wheel having its eccentricity off-set from the eccentricity of said first eccentric wheel to provide for dynamic balancing of the wheels when eccentrically moved by said input shaft;

(e) a second ring having D teeth on its inner circumference for successively engaging said C teeth when said second eccentric wheel is rolling around said inner circumference of said second ring;

(f) pin carrier means cooperating with said first and second pin receiving openings of said first and second eccentric wheels;

(g) an output shaft; and

(h) means interconnecting selected one of said first and second eccentric wheels, first and second rings, said pin carrier means and said output shaft in a given arrangement such that a desired ratio R_{io} of the number of input shaft rotations to the number of output shaft rotations is provided, R_{io} being negative if the output shaft rotations are in a direction opposite to the input shaft rotations and positive if the output shaft rotations are in the same direction as the input shaft rotations, said pin carrier means including a first pin carrier having first pins and held in a stationary position and a second pin carrier having second pins, said given arrangement being such that said first pins pass into said first pin receiving openings to hold said first eccentric wheel from rotating back and forth beyond its eccentric limits as said input shaft rotates, said second pins passing into said second pin receiving openings so that said second eccentric wheel is coupled to and rotatable with said second pin carrier, and wherein said first ring is connected to said second pin carrier and said second ring is connected to said output shaft to rotate the same therewith so that:

$$R_{io} = \frac{\left(\frac{A}{A-B}\right)\left(\frac{D}{D-C}\right)}{\left(\frac{A}{A-B}\right)+\left(\frac{D}{D-C}\right)}$$

4,338,832

SYSTEM FOR SHIFTABLE MULTI-SPEED HYDRAULICALLY OPERATED POWER TRANSMISSION AND ELECTRONIC CONTROLLER THEREIN

Paul A. Pelligrino, Rockford, Ill., assignor to Twin Disc, Incorporated, Racine, Wis.

Filed Feb. 11, 1980, Ser. No. 120,253
Int. Cl.³ B60K *41/10, 41/06*
U.S. Cl. 74—866 **13 Claims**

1. In a control system for a power transmission including a power input shaft and a power output shaft and having a plurality of speed change gears, a plurality of selectively operable fluid-actuated clutches for operating said speed change gears to provide different transmission output speed ranges, a selectively movable range selector valve for distributing pressurized fluid to operate different clutches, and a lock-up clutch which is disengageable during shifting;

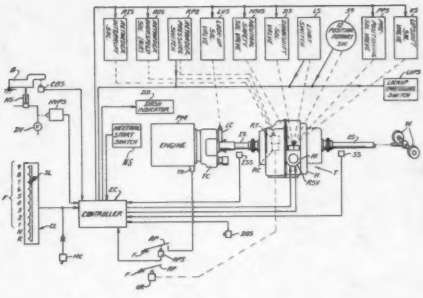
first solenoid means for operating said lock-up clutch;

means for sensing the rotational speeds of said power input and power output shafts and for providing electric speed signals indicative of the speeds of said shafts;

second solenoid means for moving said movable range selector valve;

selectively operable range selector switch means for providing an electric signal indicative of a selected shift range;

position responsive switch means for providing an electric signal indicative of the position of said range selector valve, said position responsive switch means including first switch means for providing a signal indicative that said range selector valve is in readiness regardless for movement and second switch means for providing a signal indicative of the range selector valve position;



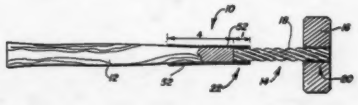
and an electronic controller for receiving said signals and for providing output signals to operate said second solenoid means to effect movement of said range selector valve to effect shifting of said transmission selected to a speed range, provided said range selector valve is in a predetermined position, and provided said means for sensing the rotational speeds of said shaft indicates that there is rotation at predetermined speeds, and to operate said first solenoid means to disengage said lock-up clutch during shifting.

4,338,833

METHOD OF MAKING A TOOL

Frank Schleffendorf, 2717 W. Agatite, Chicago, Ill. 60625

Division of Ser. No. 967,227, Dec. 7, 1978, Pat. No. 4,240,479.
This application Jul. 18, 1980, Ser. No. 170,097
Int. Cl.³ B21K *5/14, 25/00*
U.S. Cl. 76—103 **1 Claim**



1. A method of making a tool, comprising steps of;

providing a predetermined length of wire rope;

providing a pair of fastening collars having an inside diameter substantially equal to the outside diameter of said wire rope;

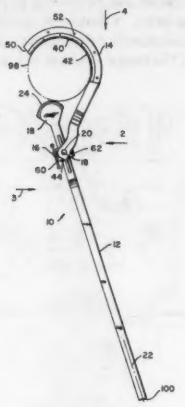
connecting the collars to the ends of said wire rope and cold working one of said collars to deform the internal surface to conform to the external surface of the wire rope; and

fastening the cold worked collar to a tool head by heat shrinking the tool head onto the collar and fastening the other collar to a handle portion.

4,338,834
WRENCH

John J. Dobias, 1212 Sumach Dr., Windsor, Ontario, Canada (N8S 2S4)

Filed Jul. 10, 1980, Ser. No. 168,374
Int. Cl.[3] B25B *13/28*
U.S. Cl. 81—106 7 Claims

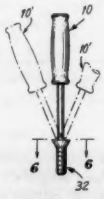


1. A wrench comprising a gripping member, a handle having a gripping portion on one end thereof, means for moving the gripping member axially of the handle to vary the position of the one end of the handle with respect to the gripping member without rotating the handle with respect to the gripping member including a slot in the handle extending axially thereof having rack teeth on the axially extending sides thereof, a gear housing surrounding the handle at the slot therein, a pair of gears mounted in the housing and extending though the slot for rotation therein in engagement with each other centrally of the slot and each engaging a separate side of the slot with gear teeth meshed in the rack teeth, and means external of the housing for rotating at least one of the gears whereby the housing is moved axially of the handle, and means for pivotally securing the gripping member to the handle through the means for moving the gripping member axially of the handle.

4,338,835
RECESSED HEAD FASTENER AND DRIVER THEREFOR

Leon Simons, 303 E. 57th St., New York, N.Y. 10022

Filed Jan. 24, 1980, Ser. No. 114,802
Int. Cl.[3] B25B *13/48*
U.S. Cl. 81—436 8 Claims



1. The combination of a fastener requiring a driver and a companion driver therefor, comprising:

a fastener body;

a fastener head attached to said fastener body, said fastener head having a socket recessed therein, the walls of said socket being a plurality of curved surfaces intersecting to form a plurality of cusps, said curved surfaces being symmetrically distributed about the longitudinal axis of said fastener;

a driver shaft;

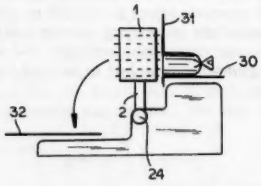
means for engaging and rotating said driver shaft;

a driver head attached to said driver shaft for rotation therewith and having a plurality of curved surfaces thereon, said surfaces intersecting to form a plurality of cusps, the number of cusps and curved surfaces on said driver head equaling the number of cusps and curved surfaces in said fastener socket, said curved surfaces of said driver head being symmetrically distributed about a longitudinal axis of said driver, said curved surfaces of said driver head and socket including circular arcs, the radii of said driver head arcs being less than the radii of said fastener arcs, the radii of said socket arcs exceeding the linear distance between said socket arcs and said fastener axis, and the radii of said driver head arcs exceeding the linear distance between said driver head arcs said driver axis, the origins of said head and socket arcs lying in cross-sections of said head and socket respectively, said cross-sections being transverse to said longitudinal axes, said head arcs being nonconcentric with said fastener arcs when said driver head seats within said fastener socket, rotating said driver head within said socket producing areas of engagement between said curved surfaces of said head and fastener.

4,338,836
SLICING MACHINE WITH SLICE-DEPOSITING DEVICE

Fritz Kuchler, Klagenfurt, Austria, assignor to Brain Dust Patents Establishment, Vadux, Liechtenstein

Filed Sep. 26, 1980, Ser. No. 191,011
Claims priority, application Austria, Sep. 27, 1979, 6354/79
Int. Cl.[3] B26D *7/00*
U.S. Cl. 83—94 7 Claims



1. In combination with a slicing machine having an upright stop plate, a carriage shiftable relative to said plate for a product to be sliced, a rotary blade spaced from said plate and cooperating with said carriage to form slices of said product which pass between said blade and said plate, and a receiving table adapted to receive said slices, a transfer device for taking up said slices from said plate and depositing said slices on said table, said transfer device comprising:

a rotary cylindrical drum formed with retractable slice-engaging needles;

means for juxtaposing said drum in an upright position with said blade whereby a slice served by said blade from said product is picked up by said drum;

means for swinging said drum into a position wherein said drum lies above said table whereby retraction of said needles deposits the picked-up slice on said table, said needles being provided in an array extending over the entire cylindrical surface of said drum, said needles being provided in rows along respective generatices of said drum, each of the needles along a respective generatrix being affixed to a common needle bar within said drum; and

spring means urging said bars inwardly, and a control member within said drum axially shiftable to displace said bars inwardly and outwardly, thereby effecting retraction and extension of said needles on said drum, said drum being

provided with a shaft tiltable about a horizontal axis and rotatable about the axis of said drum for rotation of said drum, said drum being hollow, said member being provided with a rod extending axially along said shaft and terminating in a cam follower, said device comprising a cam engaging said cam follower and effective upon tilting of said drum and said shaft about said horizontal axis for axially displacing said member relative to said drum.

4,338,837

CUTTING APPARATUS

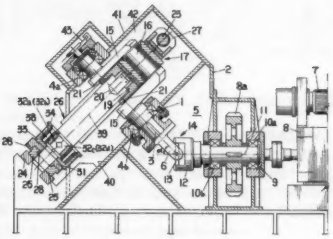
Shinichi Hori, Amagasaki, Japan, assignor to Asada Machinery Manufacturing Co., Ltd., Amagasaki, Japan

Filed May 12, 1980, Ser. No. 148,912

Claims priority, application Japan, May 28, 1979, 54-66521

Int. Cl.³ B23D *25/04*

U.S. Cl. 83—319 **10 Claims**



1. An apparatus for cutting a continuously fed in elongated workpiece into lengths, comprising: die means receptive of the fed in workpiece therethrough; means engageable with the die means for clamping the die means to a workpiece; a cutter; and means mounting the die means, clamping means and cutter for movement in a uniform linear path parallel to the longitudinal axis of the workpiece with the simultaneous movement of the clamping means and the cutter perpendicular to the longitudinal axis of the workpiece to effect the clamping of the die means to the workpiece and the cutting of the workpiece by the cutter without interrupting the movement of the workpiece, the mounting means comprising rotary drive means including a rotary shaft, crank means including a crank shaft disposed at a given angle of inclination with respect to the rotary shaft, a crosstype universal joint operatively connecting the crank means and the rotary drive means with the given angle of inclination to enable the crank means to be driven thereby, a slide block having a guide groove therein and linearly moved by said crank means, horizontally juxtaposed guide members for guiding the slide block during linear movement and a slider linearly moved by said crank means in a direction normal to the direction of movement of said slide block along the guide groove in said block, and wherein the cutter projects from said slider, the clamping means comprises clamp members projecting from said slider on both sides of said cutter and said die means is mounted on said slide block for horizontal linear travel therewith and is clamped by said clamp members.

4,338,838

APPARATUS FOR SLITTING WORKPIECES

Bernd Stursberg, Ennepetal, and Ludwig Regenbrecht, Gevelsberg, both of Fed. Rep. of Germany, assignors to Rolf Peddinghaus, Ennepetal, Fed. Rep. of Germany

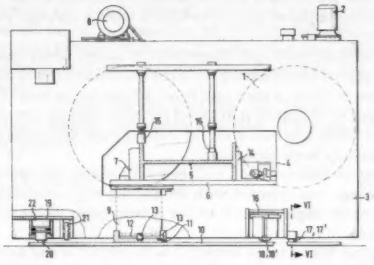
Filed Dec. 4, 1980, Ser. No. 213,197

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1979, 2949674

Int. Cl.³ B23D *47/02*

U.S. Cl. 83—467 R **11 Claims**

1. An apparatus for slitting workpieces, comprising a machine frame have a sawblade slidably mounted thereon, said frame including means for receiving a workpiece which can be fed in a path transversely of the direction of sliding movement of said sawblade, said frame also including a work support and a stop for locating a workpiece, said stop being non-rotatable in a plane in which said workpiece is fed, and being of split configuration to permit said sawblade to pass through, said machine frame having two foot elements located on a line sub-



stantially parallel to said workpiece feed path and to one side of said path, and a third foot elements located on the opposite side of said work feed path, said foot elements being engageable with a supporting bed, and means for adjusting the height of said third foot element with respect to that of said two foot elements, to tilt said frame about a tilt axis substantially parallel to said work feed path, and thereby to lower said work support relative to said feed path.

4,338,839

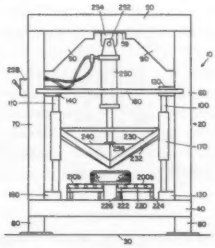
TIRE CUTTING MACHINE

Warren M. Farrell, Sr., 308 S. Avenue A, and Warren M. Farrell, Jr., Rte. 4, Box 69, both of Elgin, Tex. 78621

Filed Sep. 9, 1980, Ser. No. 185,569

Int. Cl.³ B26D *1/09, 5/12;* **B29H** *19/02*

U.S. Cl. 83—620 **1 Claim**



1. Apparatus for cutting tires, which comprises:

an upright-standing, elongate frame defining a tire cutting area accessible from the side;

the frame including a base structure having a plurality of interconnected side members giving the base structure a generally square configuration, a diagonal cross brace member extending between two opposing corners formed by the interconnection of two of the side members, first and second cross brace members, each brace extending between the mid-point of the diagonal cross brace and a corner formed by the interconnection of two of the side members, and a lower cutting blade support member attached to each cross brace member;

the frame including a top support structure;

the frame including a plurality of vertical support columns

interconnecting the base structure to the top support structure;

an elongate guide track secured to said frame, the guide track comprising a plurality of vertical rods, each rod secured at its upper and lower ends to the frame;

a carriage mounted on the elongate guide track for reciprocating vertical movement thereon, the carriage comprising a slidable sleeve disposed on each of the vertical rods of the guide track and cross-bracing members interconnecting adjacent sleeves to form a unitary carriage structure;

first, second, third and fourth pairs of shear-cutting blades;

each pair of blades having an upper blade and a lower blade;

the lower blade of each pair being affixed to the base of the frame by mounting it to one of the blade support members, and being oriented with the cutting edge extending substantially horizontal,

the upper blade of each pair being affixed to the movable carriage and oriented with the cutting edge extending at an acute angle relative to the cutting edge of the lower blade,

the upper blades being displaced with respect to one another so as to correspond to the separation between the lower blades,

the upper blade of each pair being elongated,

the elongated upper blades each being attached at one end to a sleeve on the carriage and jointly interconnected at the opposite end to one another,

each of said pairs of blades operating by action of opposed cutting edges to cut a tire placed on its side in the tire-cutting area within the frame; and

a hydraulic cylinder ram connected between the frame and the movable carriage for vertically moving the carriage relative to the frame to effect cutting action of the blades.

4,338,840

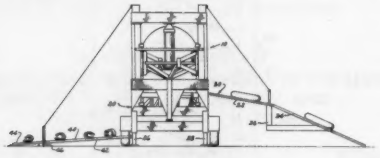
TIRE CUTTING MACHINE

Warren M. Farrell, Sr., 308 S. Ave. A, and Warren M. Farrell, Jr., Rte. 4, Box 69, both of Elgin, Tex. 78621

Filed Sep. 9, 1980, Ser. No. 185,568

Int. Cl.³ B26D *1/09, 5/12;* **B29H** *19/02*

U.S. Cl. 83—622 **3 Claims**



1. Apparatus for cutting tires, which comprises:

a frame defining a tire-cutting area;

an elongate guide track secured in fixed relation to the frame;

a carriage mounted on the elongate guide track for reciprocating movement thereon along an axis of movement;

first and second pairs of shear-cutting blades, one blade of each pair being affixed to the movable carriage and the other blade of each pair being fixed relative to the frame, each pair of blades operating by action of opposed cutting edges to cut a tire placed in the tire-cutting area of the frame,

the blades of each pair being disposed at an acute angle with respect to one another,

the angle of relative disposition of the first pair of blades being different from the angle of relative disposition of the second pair of blades, such that the first pair of blades will engage a tire for cutting before the second pair of blades so engages the tire; and

means for moving the carriage on the elongate guide track to effect cutting action of the pairs of blades.

4,338,841

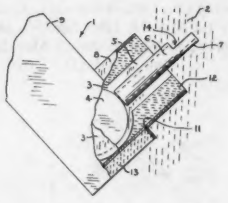
ENTRANCE TUBE FOR A SAMPLER FOR MOLTEN MATERIAL

William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

Filed Jul. 30, 1980, Ser. No. 173,486

Int. Cl.³ G01N *1/20*

U.S. Cl. 73—863.52 **9 Claims**



1. An elongated tube for the purpose described having a marginal end edge portion defining an entrance at one end of the tube for receiving a fluid, and a pair of offset contiguous notches of different depths provided in said tube adjacent said entrance whereby to facilitate entry of the fluid into the tube.

4,338,842

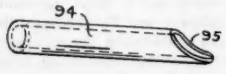
SAMPLER FOR MOLTEN MATERIAL AND ENTRANCE TUBE THEREFOR

William J. Collins, 7005 Madison St., Merrillville, Ind. 46410

Division of Ser. No. 75,941, Sep. 17, 1979, Pat. No. 4,297,902. This application Jun. 25, 1981, Ser. No. 277,264

Int. Cl.³ G01N *1/20*

U.S. Cl. 73—863.52 **10 Claims**



1. An elongated tube for use as a component of a device for obtaining a sample of molten material, and a split sleeve carried by a fore extremity of said tube and having a curved entrance extending a predetermined distance forwardly of said extremity thereof to facilitate entry of such a material into the tube.

4,338,843

ASYNCHRONOUS INTERFACE FOR ELECTRONIC MUSICAL INSTRUMENT WITH MULTIPLEXED NOTE SELECTION

Stephen A. Wise, Macungie, Pa., assignor to Allen Organ Co., Macungie, Pa.

Filed Jan. 11, 1980, Ser. No. 111,458

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—1.01 **17 Claims**

1. Apparatus for synthesizing a series of pulses for use by an electronic musical instrument in response to data provided by an external data input device, said data being indicative of one or more notes to be played by the instrument, the instrument having a multiplexer for producing a multiplexed signal asynchronously with respect to said data, said multiplexed signal comprising a series of time slots, each of which corresponds to a note which can be played by the musical instrument, comprising:

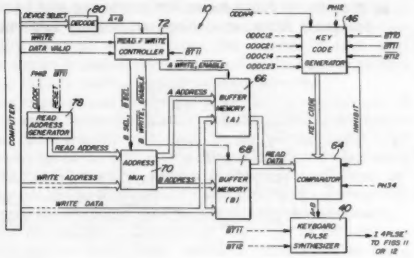
key number generating means for generating key numbers;

at least first and second buffer memories;

writing control means for alternately causing said data to be

written into said first buffer memory during a first interval of time and into said second buffer memory during a second interval of time;

reading control means for alternately causing data written into said second buffer memory to be read out of said second buffer memory during said first interval of time and for causing data written into said first buffer memory



to be read out of said first buffer memory during said second interval of time;

comparator means for comparing said data read out of a buffer memory to said key numbers and for producing a signal indicative or a match between data read out of the buffer memory and at least one of said key numbers; and

means for synthesizing a series of pulses in response to said signal indicative of said match.

4,338,844

TONE SOURCE CIRCUIT FOR ELECTRONIC MUSICAL INSTRUMENTS

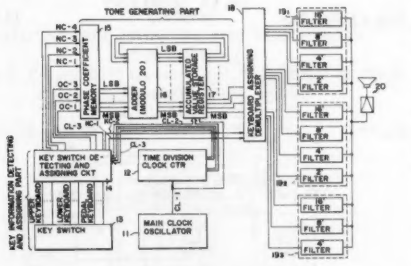
Junya Murata, Shobu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Hamamatsu, Japan

Filed Feb. 13, 1980, Ser. No. 121,136

Claims priority, application Japan, Feb. 17, 1979, 54-17665; Feb. 21, 1979, 54-19249; Feb. 21, 1979, 54-19250

Int. Cl.³ G10H *1/08, 5/06*

U.S. Cl. 84—1.01 **4 Claims**



1. A tone source circuit for electronic musical instruments, comprising:

a note assignor having a plurality of time division channels for assigning to a selective one of said channels a note code corresponding to a depressed key of the electronic musical instrument;

a phase coefficient memory which is supplied with the note code and from which a unit phase coefficient corresponding to the note code is read out for each time division;

an accumulator comprising an adder and an accumulated value storage register, said adder being supplied with the unit phase coefficient and with the value from the accumulated value storage register and provides the results of the addition as a new value to the accumulated storage register, to output from the accumulated value storage register an accumulated value of a series of ordered bits for each time division channel; and

a demutiplexer output device for taking out higher order bits for accumulated value and combining them as a rectangular wave signal to output a composite tone source signal.

4,338,845

SYSTEM FOR EXPANDING THE DYNAMIC VOLUME RANGE OF ELECTRONIC MUSICAL INSTRUMENTS

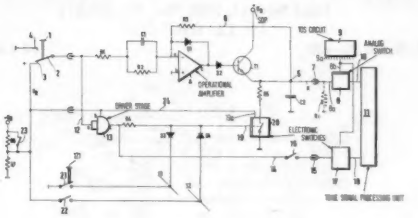
Reinhard Franz, Tulpenstrasse 15, D-5401 Emmelshausen, and Wilfried Dittmar, Halsenbach, both of Fed. Rep. of Germany, assignors to Reinhard Franz, Halsenbach, Fed. Rep. of Germany

Filed Feb. 20, 1981, Ser. No. 236,241

Claims priority, application Fed. Rep. of Germany, Feb. 21, 1980, 3006400

Int. Cl.³ G10H *3/00*

U.S. Cl. 84—1.1 **26 Claims**



1. In an electronic musical instrument, the combination of key means movable between first and second positions at a plurality of different speeds; and means for generating an envelope control signal, comprising first capacitor means, means for charging said capacitor means in the first position of said key means, means for effecting discharge of said capacitor means during movement of said key means to said second position so that the residual voltage of said capacitor means is a function of the speed of movement of said key means to said second position, amplifier means having an output and an input connected with said capacitor means for the application of said residual voltage to said input, a first feedback connection provided between said output and said input and including means for applying to said input a reference potential during movement of said key means from said first to said second position, second capacitor means connected with said output, and a second feedback connection provided between said second capacitor means and said input and including an ohmic resistance.

4,338,846

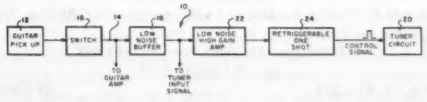
REMOTE CONTROL FOR ELECTRONIC MUSICAL INSTRUMENT EQUIPMENT

Gary S. Pogoda, 223 N. Douglass Ave., Margate, N.J. 08402

Filed Mar. 7, 1980, Ser. No. 128,268

Int. Cl.³ G10H *1/02*

U.S. Cl. 84—1.24 **2 Claims**



1. In an electronic musical instrument system including a musical instrument having an output jack, a remotely located audio device and an audio cable for carrying an audio signal from said instrument to said remotely located audio device,

said cable having a plug adapted to be plugged into said output jack, the improvement comprising:

a switch housing, said housing including a plug adapted to be plugged into said output jack of said musical instrument, said housing also having a jack adapted to be connected to the plug of said audio cable and circuit means within said housing electrically connecting said housing plug to said housing jack, and a manually operable momentary contact switch carried by said housing, said switch being adapted to short said circuit means when depressed to thereby electrically short said audio cable;

an additional circuit means located adjacent said remotely located audio device including means for sensing when said switch is depressed and means for controlling said audio device in response to said sensing means.

4,338,847

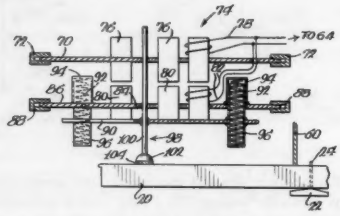
ELECTROMAGNETIC DEVICES FOR ACTUATING PIANO KEYS

John F. Brennan, John F. Kennedy La., Lebanon, Ky. 40033

Filed Nov. 14, 1980, Ser. No. 206,871

Int. Cl.³ G10F *1/02*

U.S. Cl. 84—20 **12 Claims**



1. In combination with a piano having a piano key mounted for pivotal movement about a fulcrum, said piano key having a forward end to a forward side of said fulcrum which is depressed or moved downwardly to play a note, a piano key actuating system comprising a first electromagnet having a winding across which an energizing signal may be applied; a second electromagnet having a winding across which an energizing signal may be applied; means for movably mounting said first electromagnet above an upper surface of said forward end of said key for movement toward and away from said upper surface; means extending between said first electromagnet and said upper surface of said key for depressing said forward end of said key upon downward movement of said first electromagnet; means for fixedly mounting said second electromagnet above said first electromagnet, said first and second electromagnets being mounted so that the same present opposed but spaced pole faces to each other; and means for interconnecting said first and second electromagnet windings such that upon application of an energizing signal thereacross like magnetic poles are developed at said opposed pole faces, whereby said first electromagnet is repelled away from said second electromagnet and toward said upper surface of said key to depress said key and strike a note on said piano.

4,338,848

PIANO ACTION

Harold B. Rhodes, La Habra, Calif., assignor to CBS Inc., New York, N.Y.

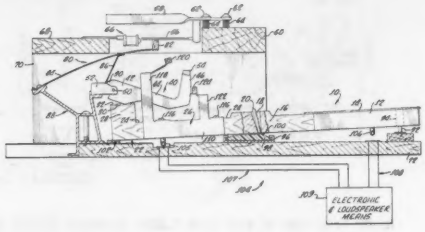
Filed Jun. 23, 1980, Ser. No. 161,658

Int. Cl.³ G10C *3/18*

U.S. Cl. 84—253 **10 Claims**

1. In an action for a musical instrument of the piano type wherein a tone is generated by striking a key to impel a hammer which strikes a tine on a power stroke, then recoils therefrom, and thereafter returns to its original rest position when the key is released, said action including a key having a forward portion, a rear portion, and a mid portion therebetween, means for pivoting said key about a transverse axis in the mid portion thereof, a hammer having a head portion for striking the tine, a foot portion for engaging the rear portion of said key, and a shank connecting the head portion and the foot portion, and means for rotating said hammer about a transverse axis through the foot portion thereof, the improvement comprising:

an escapement brake means for restraining said hammer to prevent it from rebounding and striking said tine more



than once for each strike of the key, said escapement brake means being affixed to the rear portion of said key for pivoting therewith and including:

engaging means responsive to the pivoting of said key for engaging a portion of the hammer remote from the foot thereof on said hammer's recoil after striking said tine, and

said means for rotating said hammer being adapted to cause said hammer to strike said tine on the power stroke before said engaging means contacts said hammer.

4,338,849

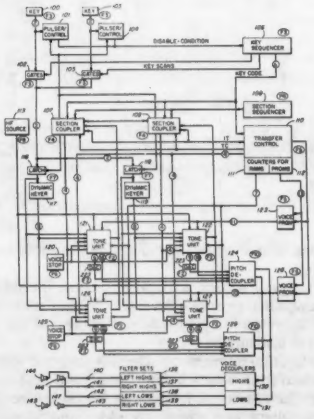
ELECTRONIC TRANSFER ORGAN

William D. Turner, 12804 Cedarbrook La., Laurel, Md. 20811

Continuation-in-part of Ser. No. 44,071, May 31, 1979, abandoned. This application Aug. 17, 1981, Ser. No. 293,273

Int. Cl.³ G10H *1/00*

U.S. Cl. 84—345 **15 Claims**



1. An electronic transfer organ, comprising in combination:

a keyboard having a multiplicity of keys, each said key corresponding to at least one of a multiplicity of nominal pitches to be sounded;

stop means having at least one stop, each said stop corresponding to a voice to be sounded;

at least one large memory for each voice, each said large memory having stored therein individualized information comprising at least the amplitude, waveform, frequency, keying phases, and spatial position in the distance-from-listener dimension of each of said nominal pitches to be sounded;

at least one array of small memories corresponding to each said large memory, said small memories being substantially identical to each other, the number of said small memories in each array being equal to the number of keys that may be desired to activate concurrently;

means responsive to depression of any key to activate one of said small memories in each array to receive information and cause transfer from each of said corresponding large memories of the said individualized information including said spatial position therein corresponding to that depressed key to the respective small memories corresponding to the depressed key for temporary storage therein;

means for causing activation of any stop to convert the information temporarily stored in each small memory corresponding to that stop and the depressed key into a signal corresponding to the information so stored, there being a said signal corresponding to each note, each said signal being individualized with respect to amplitude, waveform, frequency, and keying phases;

means responsive at least to said transferred spatial position information when a key is depressed, for generating at least four composite signals from said transferred individualized signals, each said composite signal representing a distinctive combination of the amplitudes, waveforms, frequencies and keying phases of its comprised individualized signals;

separate switch means for each voice for producing a pair of amplitude-multiplication factors characteristic of the lateral spatial position of that voice; and

means responsive to said four or more composite signals and said pair of amplitude-multiplication factors for generating sounds whose combined acoustic sound image approximates the acoustic sound image of a multiplicity of individualized sound sources distributed in at least two orthogonal spatial dimensions.

4,338,850

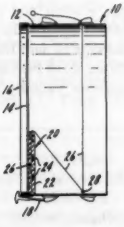
ADJUSTABLE MUFFLER FOR PERCUSSION INSTRUMENT

Albert E. Payson, 2130 Glenview Ave., Park Ridge, Ill. 60068

Filed Dec. 8, 1980, Ser. No. 213,959

Int. Cl.³ G10D *13/02*

U.S. Cl. 84—411 M **11 Claims**



1. In a percussion musical instrument having a flat membrane for producing audible tones when struck and a rigid shell upon which said membrane is mounted, the improvement comprising an adjustable muffler for selectively muffling the audible tones of the instrument without perceptively changing the pitch of the audible tones, said muffler having

a. a supple material situated contiguous to and laterally across a portion of said membrane,

b. means to maintain said material in continguous relationship to said membrane without pressing against said membrane, and

c. means to selectively withdraw successive portions of said supple material from contiguous relationship to said membrane in order to alter the degree of muffling of the audible tones.

4,338,851

CARTRIDGE BELT GUIDING MECHANISM IN AN AUTOMATIC WEAPON, THE ELEVATION OF WHICH IS ADJUSTABLE

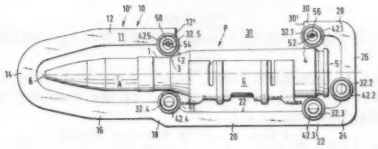
Clemens Bremer, Duesseldorf, and Horst Menges, Ratingen, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Sep. 24, 1980, Ser. No. 190,419

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1979, 2948685

Int. Cl.³ F41D *10/40*

U.S. Cl. 89—33 BB **4 Claims**



1. A cartridge belt guiding mechanism for automatic weapons disposed between the outlet of an ammunition belt storage container and an ammunition belt inlet of the automatic weapon, comprising in combination,

a plurality of elements which at least partially surround the longitudinal axial contour of the cartridge at a predetermined distance therefrom,

each element having a plurality of guide members mounted thereon,

coil springs mounted on said guide members and connecting adjacent elements to each other and being adapted to slidingly guidingly engage the cartridge passing through the corresponding element so as to form a flexible guide channel for the ammunition belt from the outlet of the ammunition belt storage container to the inlet for the ammunition belt in the automatic weapon, the elements forming the ends of said channel being respectively connected to said outlet and inlet.

4,338,852

BUMP STOP FOR TRUNNION-MOUNTED WEAPON

Richard L. Jarvis, Harford County, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

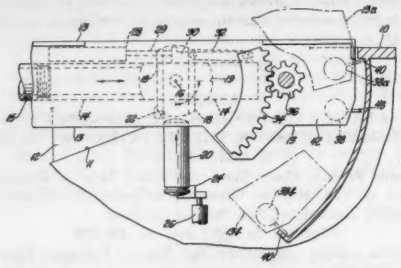
Filed May 19, 1980, Ser. No. 150,872

Int. Cl.³ F41D *11/24*

U.S. Cl. 89—37 E **6 Claims**

1. In a trunnion-mounted weapon that includes a receiver adapted to swing in the elevational plane between stationary stops: the improvement comprising a torsion bar shock absorber carried by the receiver for resiliently absorbing shock loads as the receiver nears the limits of its swing motion; said shock absorber comprising a tube rotatably mounted on the receiver for motion around an axis parallel to the receiver swing axis, a striker arm carried by the tube for engagement with the aforementioned stationary stops to impart rotary motion to the tube, torsion bar means located within the tube, a first anchor means interconnecting one end of the torsion bar means and the receiver, and a second anchor means interconnecting the other end of the torsion bar means and the corre-

sponding end of the tube, the shock absorber being constructed so that shock is transmitted from the striker arm to the tube,



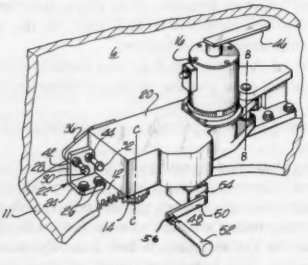
thence through the second anchor means to the torsion bar means.

4,338,853

MEANS TO MINIMIZE THE BACKLASH OF MESHING GEARS

Martin J. Neumeyer, Utica, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1979, Ser. No. 88,433
Int. Cl.³ F41F *21/02*
U.S. Cl. 89—41 R **6 Claims**



1. A precision power gear train assembly for imparting relative rotation between a relatively stationary member of a power user device and a relatively rotatable driven member mounted thereon about a given body axis via enmeshed output and compatible gears thereof, and embodying novel means for minimizing backlash of said enmeshed gears, said precision power gear train assembly comprising:

(a) a power drive gear train and a power train support therefor collectively mounted for oscillation upon the rotatable driven member and oscillatable about a first axis;

(b) the power gear train having an output gear mounted on said support and disposed for rotation about a second axis which is spaced from and substantially parallel to said first axis as well as to said given body axis;

(c) said output gear being adapted to mesh with a relatively stationary compatible gear of said power user device, with the compatible gear axis coinciding with said given body axis;

(d) the line of centers of the output gear and said meshing compatible gear forming a right angle with another line intersecting said first and second axes of rotation; and

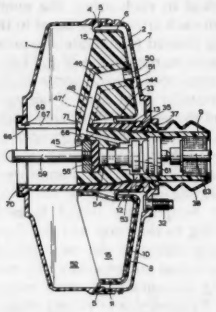
(e) compression spring means for yieldably biasing the two gears into mesh to eliminate backlash under a load of gear tooth pressure imposed which is no greater than a given maximum and also to permit separation of the two gears when tooth pressure loads exceed said maximum.

4,338,854

SERVO BOOSTERS FOR VEHICLE BRAKING SYSTEMS

Hugh G. Margetts, Warwickshire, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Nov. 20, 1979, Ser. No. 95,961
Claims priority, application United Kingdom, Nov. 21, 1978, 45469/78
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—369 A **3 Claims**



1. A servo booster for a vehicle braking system comprising a booster housing, output and input members at the front and rear respectively of the booster, front and rear housing walls of said booster housing, a movable wall dividing the interior of said booster housing into front and rear chambers, said movable wall comprising a diaphragm support plate and a flexible diaphragm which seals said movable wall at its radially outer periphery to said booster housing, a valve body, an integral connection connecting said diaphragm support plate to said valve body, force transmitting means comprising a tube which is substantially co-axial with the movable wall and extends forwardly from said rear housing wall in fluid tight relationship therewith, said tube extending to said front housing wall and being stationary with respect to the vehicle in use and arranged substantially to relieve said booster housing of braking reaction forces, seal means fixedly sealing said movable wall at its radially inner extremity to the radially outer surface of said tube, said tube having at least one aperture therein, said integral connection connecting said diaphragm support plate to said valve housing comprising an arm extending through said aperture, a valve member located in said valve body, said valve body being provided with a valve chamber adjacent to said valve member, and a fluid conduit connecting said valve chamber and said rear chamber, said fluid conduit comprising intercommunicating first, second and third passages in said valve body, integral connection and diaphragm support plate, respectively, said first passage of said fluid conduit opening to said valve chamber, and said third passage of said fluid conduit opening to said rear chamber radially outwards of said seal means.

4,338,855

RELIEF VALVE MECHANISM FOR A HYDRAULIC BOOSTER

Yasufumi Ideta, Tokyo, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

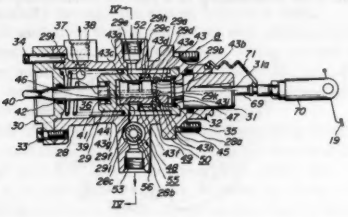
Filed Jan. 16, 1980, Ser. No. 112,526
Claims priority, application Japan, Jan. 17, 1979, 54/4096
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—378 **3 Claims**

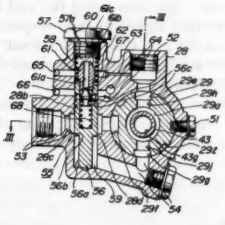
1. A relief valve mechanism of a hydraulic booster which includes a main throttle valve, through which hydraulic oil is supplied to a power steering, said main throttle valve being formed by a spool cooperating with a brake pedal to throttle hydraulic oil flow supplied thereto when the brake pedal is

depressed, and a power piston which moves in the depressed direction of the brake pedal to follow the spool by introducing oil pressure produced on the upstream side of the main throttle valve into a boost chamber which is normally communicated with a drain chamber:

said relief valve mechanism comprising a pilot chamber which is supplied with said upstream side oil pressure through an orifice;

and a main relief valve applied with said upstream side oil pressure in opposition to the pressure supplied to the pilot chamber;





said main relief valve including a pilot valve which communicates the pilot chamber with a drain passage when the oil pressure in the pilot chamber exceeds a predetermined value;

said main relief valve being in opened position for passage therethrough of said upstream side oil pressure to the power steering independently of said oil supply to the power steering through the main throttle valve; and

said main relief valve further including a valve body cooperating, in said opened position of said main relief valve, with a wall of the pilot chamber to form a further throttle for the oil flow to be supplied to the pilot valve.

4,338,856

DUAL PILOT COUNTERBALANCE VALVE

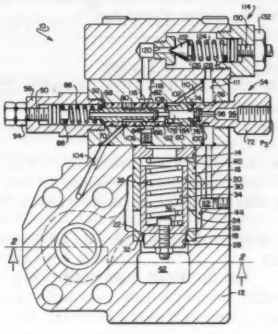
Robert Smilges, Columbus, Ohio, and Richard Wigmore, Brighton, England, assignors to Abex Corporation, New York, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,484

Int. Cl.[3] **F15B** *13/00*

U.S. Cl. 91—420 **3 Claims**

1. A counterbalance valve for controlling the flow of high pressure fluid from a hydraulic motor which moves a load and is driven by a pump having an inlet and an outlet comprising a valve body, a fluid inlet in the body, a fluid outlet in the body, means for connecting the outlet of the motor to the fluid inlet whereby the motor supplies pressure fluid to the fluid inlet, a first fluid passage which connects the inlet and the outlet, a poppet bore, a seat, a poppet movable in the bore between a first setting in which the poppet engages the seat and blocks the first fluid passage and a second setting in which the poppet is spaced from the seat and cooperates with the seat to open the first fluid passage and form a control orifice through which pressure fluid flows from the inlet to the outlet, and spring means for biasing the poppet into the said first setting, characterized by a second fluid passage connected to the top of the poppet, a control port at the entrance to the second fluid passage, means for connecting the control port to pressure fluid in the fluid inlet, second means for connecting the control port to the fluid outlet, a pilot valve movable between a first position in which the control port is open to receive inlet pressure fluid, a second position in which the control port is blocked and a third position in which the control port is open to the fluid outlet, second spring means for biasing the pilot valve into the first position, a pilot port connected to the pilot valve, and means for connecting the pump outlet to the pilot



port, wherein the pilot port receives pressure fluid from the pump to bias the pilot valve into the third position when the pump drives the motor and the counterbalance valve begins to operate to thereby open the control orifice to permit fluid to flow from the fluid inlet to the fluid outlet, and the pilot valve moves in response to changes in the pressure of the fluid in the pilot port alternatively between the first and third positions to modulate the opening of the control orifice and control the flow of pressure fluid from the hydraulic motor and the pilot valve remains in the second position and the control orifice maintains its opening when the pilot pressure is constant.

4,338,857

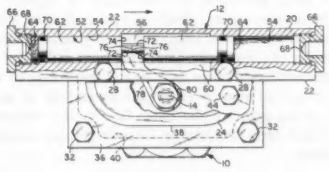
ROTARY ACTUATOR FOR VALVE

Edward M. Mason, St. Louis, Mo., assignor to Lee Engineering, Inc., St. Louis, Mo.

Filed Jul. 14, 1980, Ser. No. 168,571

Int. Cl.[3] **F01B** *7/00;* **F16K** *31/122*

U.S. Cl. 92—62 **4 Claims**



1. An actuator for rotating a shaft, the actuator comprising:

(a) a housing including passage means having opposed ends, each end having fluid inlet and outlet means,

(b) piston means slidingly mounted in the passage means for reciprocative movement between the opposed ends of the passage means, said piston means including a pair of opposed, unconnected independent piston elements having cam-engageable inner end portions disposed in spaced relation axially of said piston means and having interengageable inner ends for moving the piston elements in unison, and

(c) a radial arm attached to the shaft for rotation thereof, said

arm including a substantially symmetrical cam means at the remote end, said cam means having opposed cam faces, and said cam means being configurated so that the overall distance across the cam faces adjacent corresponding cam-engageable inner end portions, during rotary movement of the arm, is less than the distance between the cam-engageable inner end portions, whereby when any one cam face engages an adjacent inner end portion, a gap is created between the other cam face and an adjacent inner end portion as the piston elements are moving in unison, wherein pressure is transmitted between the piston elements directly rather than through the medium of the radial arm by virtue of said gap.

4,338,858

INTERNAL COMBUSTION ENGINE PISTON

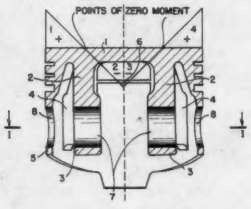
Johannes Reitz, Heilbronn-Kirschhausen, Fed. Rep. of Germany, assignor to Metallgesellschaft AG, Frankfurt am Main, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 771,123, Feb. 22, 1977, abandoned, which is a continuation-in-part of Ser. No. 583,492, Jun. 3, 1975, abandoned. This application Oct. 2, 1978, Ser. No. 948,183

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1974, 2430829

Int. Cl.³ F02F *3/00*; F16J *1/14*

U.S. Cl. 92—222 **1 Claim**



1. In a piston for an internal combustion engine, the piston comprising aluminum or an aluminum alloy, and having a head, a skirt depending from the head and two pin bosses extending downwardly from the underside of the head, the piston being provided with a horizontal transverse slot throughout a circumferential arc of 70°–110° between the head and skirt, the extending end portions of the bosses being provided with substantially planar and parallel inner and outer faces having aligned throughbores receptive of a piston pin and the skirt being provided with apertures in registry with said bores, the improvement which comprises having each of said bosses joined by one first rib to the underside of the piston head and by a pair of second ribs extending outwardly and diverging from adjacent to its outer face to the inner side of the piston skirt, the second ribs of each pair extending at an angle of 30°–45° to the plane of the inner face of the respective boss, and each first rib is disposed at the point of zero moment on the piston head.

4,338,859

HUMIDIFYING AID

Bette Claytor, 360 Cobblestone Dr., Colorado Springs, Colo. 80906

Filed Sep. 22, 1980, Ser. No. 189,266

Int. Cl.³ F24F *3/14*

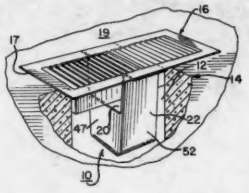
U.S. Cl. 98—105 **7 Claims**

1. A humidifying aid adapted to contain water or the like and to be mounted in a rectangular outlet opening of a furnace air recirculating system under an open grill cover having louvers depending into the outlet opening, comprising:

a generally rectangular body having an open top for receiving the water or the like, said body having a bottom wall and pairs of end and side walls;

a pair of first and second upstanding arms integrally connected to and extending upwardly from said end walls, said arms being flat and being substantially the same width as the width of their respective end walls to form integral extensions thereof, said arms being substantially longer than the height of the side walls of said body to position said body below the louvers for enabling said body to be disposed, below the louvers, by a substantial distance from the rim of the opening;

said arms terminating in a pair of transversely outwardly-



extending ears, said ears being flat and extending at approximately right angles to their respective arms for fitting between the grill cover and the rim of the opening;

said arms and said body being composed of a unitary one-piece molded plastic material; and

said side walls being substantially longer than said end walls and being almost the same length as the width of the rectangular opening to enable the body to extend thereacross, said end walls being substantially shorter in length than the length of the rectangular opening to enable the body to be positioned spaced from either end of the rectangular opening to provide air passage spaces at both sides thereof.

4,338,860

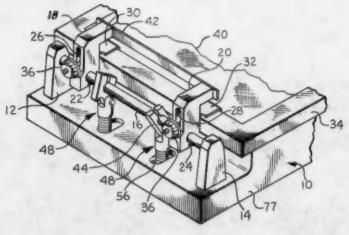
HINGE AND SPACER APPARATUS

Kaino J. Hamu, 25142 Wandering La., El Toro, Calif. 92630

Filed Mar. 21, 1980, Ser. No. 132,389

Int. Cl.³ B41F *15/00, 15/18*

U.S. Cl. 101—126 **14 Claims**



1. Hinge apparatus for connecting first and second associated members which comprises:

a pivot shaft pivotal between a first rotative position and a second rotative position,

means for releasably fixing said shaft to the first associated member,

means for mounting said shaft on the second associated member,

first biasing means operative to bias said pivot shaft toward said second rotative position only when said pivot shaft is not in said first rotative position, and

second biasing means operative to bias said pivot shaft

toward said first rotative position only when said pivot shaft is not in said second rotative position,

each of said biasing means including a crank arm fixed to said shaft,

a reciprocally mounted element and a helical compression spring urging said reciprocally mounted element which in turn biases its associated crank arm,

said crank arm of said first biasing means being rotatively positioned relative to said shaft so that when said pivot shaft is in said first rotative position the force of the helical compression spring of said first biasing means is directed substantially through the axis of said pivot shaft,

and when said pivot shaft is not in said first rotative position the force of said associated helical spring of said first biasing means is displaced to a first side of the axis of said pivot shaft so as to bias said pivot shaft toward said second rotative position,

said crank arm of said second biasing means being rotatively positioned relative to said shaft differently than said crank arm of said first biasing means so that when said pivot shaft is in said second rotative position the force of the helical compression spring of said second biasing means is directed substantially through the axis of said pivot shaft and when said pivot shaft is not in said second rotative position the force of said associated helical spring of said second biasing means is displaced to a second side of the axis of said pivot shaft,

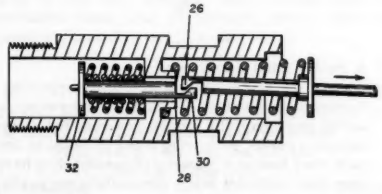
whereby the helical compression springs are always acting to rotate said pivot shaft in opposite directions when said pivot shaft is between its first and second rotative positions.

4,338,861

HIGH "G" FIRING MECHANISM

Richard R. Rhodes, Stroudsburg, and Robert L. Kenney, Jr., Philadelphia, both of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 8, 1980, Ser. No. 184,716
Int. Cl.³ F42C *15/20, 1/02*
U.S. Cl. 102—261 **8 Claims**



8. The method of driving a device at a high force in a first direction in response to a lesser force in the opposite direction, comprising the steps of:

precompressing a pair of opposing springs,

holding said springs under precompression between a first member and a second member, which are releasably secured to each other,

applying a force to said second member in one direction thereby increasing the compression on one of the springs tending to drive said first member in the opposite direction, the force on said second member being assisted by the precompression of the other of said springs,

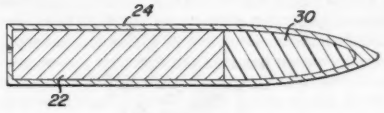
separating said first member from said second member in response to a predetermined force in said one direction and thereby driving said first member in the other direction in response to the force resulting from said precompression of said one of the springs plus the compression resulting from said force in one direction.

4,338,862

BULLET NOSE FILLER FOR IMPROVED LETHALITY

Richard Kwatnoski, Lumberville, Pa., and Robert J. McHugh, Willingboro, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 3, 1975, Ser. No. 620,476
Int. Cl.³ F42B *11/08*
U.S. Cl. 102—516 **1 Claim**



1. In a small arms cartridge, said cartridge having a case wall and a propellant therewithin; a head portion including means for igniting said propellant, the combination therewith of a projectile for increasing lethality of said projectile against soft targets by tumbling of said projectile therewithin substantially sooner than standard lead core and tracer bullets fired from similar cartridges and distances,

a hollow metal jacket having a closed tip end,

a structurally integral nose filler contained within a forward portion of said jacket, said nose filler comprising a thermoplastic resin having a specific gravity ranging between about 0.95 and 1.02 gm/cc, and about 20 to 40% of the length of said projectile,

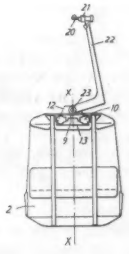
a heavy metal core within said jacket rearwardly adjacent said nose filler, said projectile forming a double wound tract in said soft target when said nose filler shears from said heavy metal core upon slight penetration of said projectile into said soft target.

4,338,863

PNEUMATIC SUSPENSION SYSTEM FOR ROPEWAY CARS

Francis Tauzin, Veyrins, France, assignor to Pomagalski S.A. and Sigma Plastique, both of, France

Filed Apr. 29, 1980, Ser. No. 144,816
Int. Cl.³ B61B *3/00*
U.S. Cl. 104—89 **4 Claims**



1. In a ropeway car of the type comprising a metal carrier framework suspended from a wire rope of the ropeway and a revetment carried by said framework, a pneumatic suspension system which comprises:

(i) a top frame structure rigid with said car framework and including a platform,

(ii) a carrying strap suspended from the wire rope of the ropeway, and including a bottom portion,

(iii) a balloon tire interposed between the platform of the top frame structure and the bottom of said carrying strap, whereby said top frame is carried by said tire and is resil-

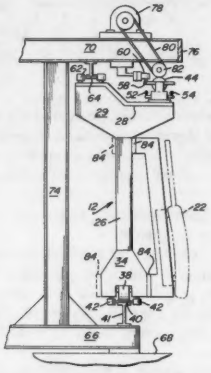
iently restrained against any movement relative to said carrying strap.

4,338,864

ASSEMBLY LINE DRIVERLESS VEHICLE

Barry L. Ziegenfus, Saylorsburg, Pa., assignor to SI Handling Systems, Inc., Easton, Pa.

Filed Apr. 8, 1980, Ser. No. 138,379
Int. Cl.³ B61B *13/04, 13/12*
U.S. Cl. 104—121 **9 Claims**



1. A driverless vehicle comprising a vertical frame whose primary function is to support a workpiece as the frame moves along an assembly line, said frame having a height which is greater than its width, at least one drive wheel mounted on the upper end of said frame and biased upwardly for contact with a driveshaft, at least one actuator on the frame and coupled to the drive wheel for oscillating the drive wheel about a vertical axis between drive and stop positions, aligned support wheels on the lower end of said frame for riding on a track, guide means on said frame for rolling contact with a guide generally parallel to the track, and a fixture on a side face of said frame for removably supporting the workpiece in an upright position so that the workpiece may be worked on at stations along an assembly line.

4,338,865

RAILWAY TRUCK ADAPTABLE TO RECEIVE A COMMON PRIMARY SUSPENSION AND VARIABLE JOURNAL BEARINGS

Walter S. Eggert, Jr., Huntington Valley, Pa., assignor to The Budd Company, Troy, Mich.

Filed Jul. 7, 1980, Ser. No. 166,360
Int. Cl.³ B61F *5/26, 5/06*
U.S. Cl. 105—202 **5 Claims**

1. A railway truck comprising:

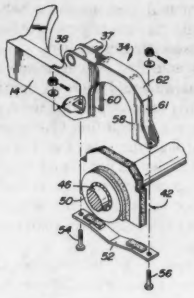
(a) a main body including a pair of spaced longitudinally extending parallel side frames connected by transverse connecting members, the ends of said side frame extending beyond said connecting frame members and disposed to receive mounting members;

(b) a plurality of mounting members for receiving suspension elements and journal mountings for wheel-axle assemblies,

(c) means for connecting said mounting members at predetermined locations on said truck side frames,

(d) a plurality of gusset members connecting the ends of said side frames to the sides of said mounting members to provide a principal structural load path between said end frames and mountings; and

(e) a pair of gussets are connected to each of said mounting member on opposite sides of each of said mounting member, said connections between said side frames, said gussets and said mounting members comprise weld connections for providing two separate structural paths between said side frames and said mounting members.

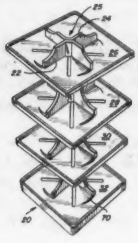


4,338,866

KNOCK-DOWN DISPLAY STAND

Kenneth F. Streit, Mt. Prospect, Ill., assignor to Techplastics, Inc., Ill.

Filed Dec. 10, 1979, Ser. No. 101,888
Int. Cl.³ A47B *3/06*
U.S. Cl. 108—111 **21 Claims**



1. A display stand comprising:

(a) means for supporting shelves, said supporting means defining a longitudinal V-shaped, symmetrical structure having two intergrally formed, generally flat, transversely extending wings, each wing being identical to the other, each wing having a plurality of parallel slots having one open end, each slot being substantially perpendicular to the longitudinal axes of said wings, said slots defining the thickness of the shelf to be supported, the longitudinal distance between said slots defining the space between successive tiers of said shelves, each wing having an edge substantially perpendicular to the longitudinal axis of said wing, said structure freely standing erect when resting on said edge; and

(b) a plurality of generally flat planar shelves, each shelf having at least one X-shaped opening in the plane of said shelf, said openings being substantially the same shape as the cross section of the structure formed by mating together a pair of supporting means apex to apex, said display stand being formed by joining said pair of supporting means so as to define a generally cruciform shaped column, said pair of supporting means being held together by adding shelves to said pair of supporting means, shelves being added by inserting each of said shelves over the top side of said pair of supporting means, each shelf being aligned to a set of paired slots in said pair of supporting means and rotated in the direction away from said shelf

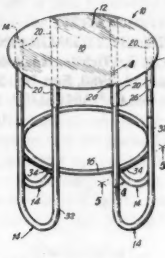
opening, positioning said wings over a closed surface of said shelf having the effect of interlocking said shelves and said pair of supporting means to form a self-supporting vertical array of parallel shelves.

4,338,867

TABLE ASSEMBLED WITHOUT FASTENERS

Marion Imber, Stamford, Conn., assignor to Ray Control Corp., New York, N.Y.

Filed Feb. 11, 1980, Ser. No. 120,170
Int. Cl.³ A47B *3/06*
U.S. Cl. 108—159 **12 Claims**



1. A table comprising:

a top;

a plurality of engagement means, each said engagement means being connected to said top and extending downwardly therefrom in a direction approximately perpendicular to said top;

a plurality of legs, each leg being connected with one of said engagement means; and

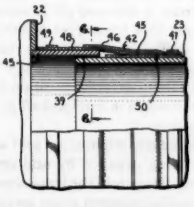
spreader means contacting said legs and pushing said legs into frictional contact with surface portions of said engagement means to frictionally connect each leg to its associated engagement means, said spreader means not being joined to said legs and being compressively acted upon by said legs, said legs being unconstrained from separation from said engagement means when said spreader means does not push said legs.

4,338,868

REFUSE BURNING PROCESS AND APPARATUS

la Clede Lientz, P.O. Box 430, Branson, Mo. 65616

Filed Feb. 3, 1981, Ser. No. 231,163
Int. Cl.³ F23G *5/06*
U.S. Cl. 110—246 **11 Claims**



1. An apparatus for burning refuse having polyvinyl chloride therein comprising:

(a) a rotary furnace having a rotating middle section and stationary heads at opposite ends of said middle section;

(b) first delivery means for transmitting refuse to said furnace; said first delivery means being adapted to restrict flow of oxygen through said delivery means into said furnace;

(c) second delivery means for conveying non-combusted refuse from said apparatus; said second delivery means being adapted to prevent flow of oxygen through said second delivery means to said furnace;

(d) a sealing mechanism between said furnace middle section and each of said heads respectively; each of said sealing mechanisms comprising a lower, an intermediate and an upper strap; said lower and upper straps being secured in overlapping manner to a first of said middle section or an associated head; said intermediate strap being secured to a second of said middle section or the associated head; said intermediate strap being flexible and slideably positioned between said upper and lower straps and sealably engaged therewith such that when said middle section is rotating with respect to said associated head, oxygen is substantially restricted from passing therebetween;

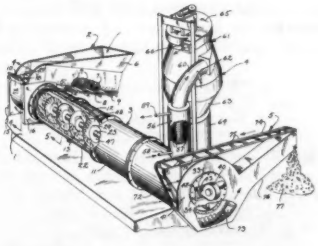
(e) whereby oxygen flow to said furnace can be controlled when the refuse is being combusted therein such that the temperature in said furnace is adapted to be controlled below about 1200 degrees F. so that phosgene is not produced by the burning of the polyvinyl chlorides in the refuse.

4,338,869

COMBUSTION APPARATUS UTILIZING AN AUGER HAVING AN INTEGRAL AIR SUPPLY SYSTEM

Gordon H. Hoskinson, 1130 Caliente, Jackinsonville, Fla. 32211, assignor to Gordon H. Hoskinson, Floral Park, N.Y.

Division of Ser. No. 573,269, Apr. 30, 1975, Pat. No. 4,231,304.
This application Mar. 31, 1980, Ser. No. 135,010
Int. Cl.³ F23G *5/12*
U.S. Cl. 110—346 **4 Claims**

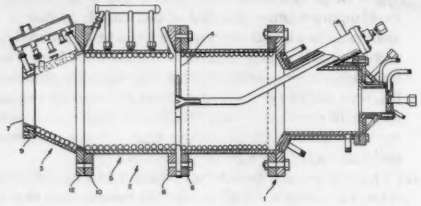


1. A method of burning combustible waste material comprising the step of feeding waste material into an elongated combustion chamber, igniting the waste material, moving the ignited waste material through the chamber with a rotating screw conveyor having a hollow flight and having a plurality of ports providing communication between the interior of the hollow flight and the chamber, and introducing air into the hollow interior of the flight and discharging the air through said ports into the interior of the mass of waste material and into the upper portion of the combustion chamber above the level of the waste material to provide a secondary zone of combustion for combustible waste gases.

4,338,870
HIGH TEMPERATURE OXYGEN HAZARDOUS WASTE INCINERATOR

John H. Lanier, Jr., Murfreesboro, Tenn., assignor to Holley Electric Corp., Jacksonville, Fla. and J. B. Dicks & Ass. Inc., Tullahoma, Tenn.

Filed Dec. 5, 1980, Ser. No. 213,636
Int. Cl.[3] F23G 7/00
U.S. Cl. 110—346 20 Claims

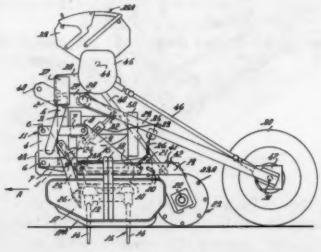


1. An apparatus for incinerating hazardous waste comprising:
an incinerator shell;
means for providing a mixture of a fuel and the hazardous waste to said incinerator;
means for preheating oxygen to a temperature sufficient to produce a hypergolic combustion when mixed with the fuel provided by said means for providing; and
means for mixing said mixture and said preheated oxygen and for producing a hypergolic combustion in said incinerator shell;
said hypergolic combustion producing temperatures sufficient to oxidize said hazardous waste.

4,338,871
SOIL CULTIVATING IMPLEMENT INCLUDING DISPENSER AND SUPPORT ROLLER

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Continuation of Ser. No. 796,355, May 12, 1977, abandoned, which is a division of Ser. No. 540,444, Jan. 13, 1975, Pat. No. 4,036,154. This application Nov. 16, 1978, Ser. No. 961,479
Claims priority, application Netherlands, Jan. 18, 1974, 7400690
The portion of the term of this patent subsequent to Jan. 23, 1996, has been disclaimed.
Int. Cl.[3] A01C 7/08, 7/20
U.S. Cl. 111—10 8 Claims

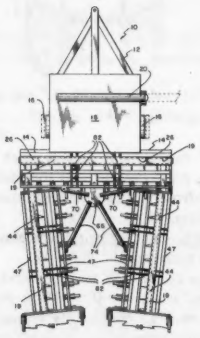


1. A cultivating implement comprising a frame and a plurality of mechanically driven soil working members rotatably mounted on an elongated portion of said frame, said elongated portion extending transverse of the direction of travel and being pivotably connected to a second portion of the frame, said elongated frame portion being interconnected to and at least partly supported by a ground engaging roller that governs the working depth of said soil working members and said roller being positioned to the rear of the soil working members, a mechanism on said frame for applying material onto or/and into the soil being mounted on said second frame portion and said mechanism comprising hopper means with a plurality of downwardly extending delivery members that receive material from the hopper means, a common elongated support for said delivery members being positioned to the rear of said soil working members and in front of the rear side of said roller, the lower portions of said delivery members opening above said roller and being pivoted to said support, spaced apart arms interconnecting said roller to the opposite lateral sides of said elongated frame portion and said support being connected to said arms, said delivery members being movable relative to said support to avoid damage when the frame portion pivots during travel.

4,338,872
MULTIPLE SECTION GRAIN DRILL

Lester H. Decker, R.R. 3, Wichita, Kans. 67220

Filed Apr. 14, 1980, Ser. No. 139,646
Int. Cl.[3] A01C 5/00
U.S. Cl. 111—56 9 Claims



1. A multiple section grain drill for being towed by a tractor, or the like, comprising:
(a) a main frame including a transverse segment;
(b) at least two (2) wheels rotatably connected to said frame;
(c) a grain container mounted on said frame for receiving grain;
(d) a central flight means mounted on said transverse segment of said main frame and in communication with the grain in the container for bidirectionally moving said grain;
(e) at least one wing frame slidably engaging said main frame;
(f) a means connected to said main frame for shifting said wing frame from a fore-and-aft position with respect to said main frame to a transverse position with respect to same or vice versa in order to align the wing frame with the transverse segment of said main frame, said wing frame when in the transverse position being in the working position and when in fore-and-aft position being in the travelling position;
(g) a wing flight means mounted on said wing frame, collinear with and being engaged by said central flight means when said wing frame is in the transverse position in order to unidirectionally transport grain away from said central flight means;
(h) furrow opener means pivotally attached to said transverse segment and to said wing frame for generating furrows;
(i) grain distributing means in communication with said central flight means and said wing flight means for depositing said grain in said generated furrows;

(j) furrow closing and pressing means to direct soil into the furrow to cover the grain therein and to press the soil covering the grain, said furrow closing and pressing means being pivotally connected to said transverse segment and to said wing frame; and

(k) power take off means from said tractor, or the like, for driving said central flight means which in turn drives said wing flight means, for pivoting said furrow opener means and said furrow closing and pressing means to adjust the height of same with respect to the ground, and for rendering power to said means for shifting said wing frame, said means connected to said main frame for shifting said wing frame from a fore-and-aft position with respect to said main frame to a transverse position with respect to same or vice versa in order to align the wing frame with the transverse segment of the main frame comprises a tongue attached to the aft of said transverse segment; said transverse segment having a channel traversing the aft section of same; at least one inside hydraulic cylinder pivotally connected to said tongue and having an inside hydraulic arm; a hinge bound to a corner of said wing frame and slidably lodged within said channel; said inside hydraulic arm pivotally attaching to said hinge; an outside cylinder pivotally attached to said tongue and including an outside hydraulic arm pivotally connected to said wing frame; a hydraulic power means for rendering power to said inside and outside hydraulic cylinder, said hydraulic power means being controlled and coming from said tractor, or the like.

4,338,873

THREAD CHAIN SEWING METHOD AND DEVICE FOR USE IN THE TWO-NEEDLE OVERLOCK SEWING MACHINE

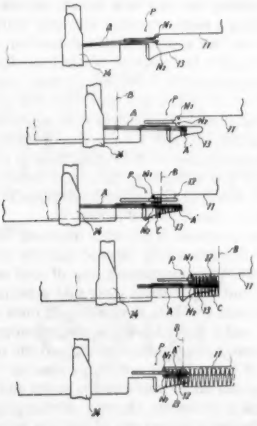
Yoshinari Ueyama; Kikuo Mori, both of Osaka, and Hideo Matsushita, Hyogo, all of Japan, assignors to Pegasus Sewing Machine Mfg. Co., Ltd., Japan

Filed Jun. 24, 1980, Ser. No. 162,522

Claims priority, application Japan, Mar. 14, 1980, 55-32909

Int. Cl.³ D05B *1/10*

U.S. Cl. 112—262.1 **12 Claims**



1. A method for backtacking thread chains formed on a two-needle overlock sewing machine having an outer chaining-off finger on a needle plate of said machine and an inner chaining-off finger arranged alongside said outer chaining-off finger, needle drop points for the two needles being positioned on both sides of the inner chaining-off finger, the method comprising:

retractably arranging said inner chaining-off finger from an advanced position alongside the outer chaining-off finger;

shifting said inner chaining-off finger to the advanced position during a prescribed period of sewing machine operation; and;

shifting said inner chaining-off finger to a retracted position during the rest of the period of operation.

4,338,874

INERT GAS SUPPLY AND SALVAGE SYSTEM FOR OIL TANKERS

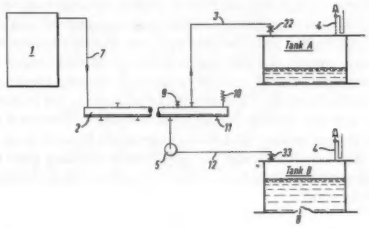
Peter V. Shaw, London, and Stewart Speed, Bromley, both of England, assignors to The British Petroleum Company Limited, London, England

Filed Jan. 25, 1980, Ser. No. 115,341

Claims priority, application United Kingdom, Feb. 17, 1979, 7905651

Int. Cl.³ B63C *7/12*

U.S. Cl. 114—50 **5 Claims**



1. A method for salvaging an oil tanker comprising:

purging combustible gasses from a compartment of said tanker;

regulating the back pressure of purged gasses;

connecting, via a covering plate, a source of inert gas to a first opening of said compartment;

forcing said inert gas into said compartment via said first opening with a pressure equal to or greater than said back pressure to insure complete purging of said combustible gasses;

lowering a pump and pump driving and discharge hoses via a lift cable through a second opening into said compartment; and

slidably sealing said lift cable and said pump hoses to said second opening for containment of said gasses while pumping liquid via said pump discharge hose from said compartment.

4,338,875

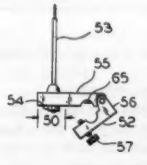
BOATS HARDWARE SYSTEM

Walter E. Lisowski, P.O. Box 558, Addison, Ill. 60101

Division of Ser. No. 834,416, Sep. 19, 1977, Pat. No. 4,194,451, and Ser. No. 761,793, Jan. 24, 1977, abandoned. This application Mar. 14, 1980, Ser. No. 130,264

Int. Cl.³ B63B *9/00*

U.S. Cl. 114—221 R **8 Claims**



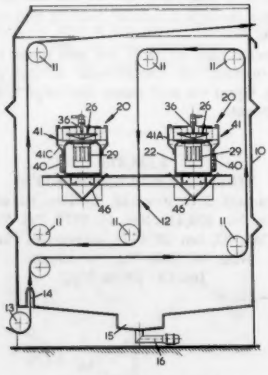
1. A universal mount especially for use on boat rails, said

universal mount consisting of first and second opposing massive block members formed from a generally rigid plastic material which works internally to attenuate vibrations, said plastic having a surface character and a degree of softness such that it does not mar the surface of said boat rail, said material being light enough to float in water, one end of each of said blocks terminating in upstanding hinge sections which come together in an interleaving relationship to form a hinge when the blocks are placed in a face to face relationship, screw fastening means captured on the other end of one of said blocks, threaded nut fastening means located on the other of said blocks at a point where said screw fastening means engages said nut when said blocks are in said face to face relationship, said screw fastening means having a head which is shaped and dimensioned to enable said blocks to be drawn tightly together responsive to finger pressure, a single and exclusively straight cove formed in each of said blocks at opposed locations between said hinge sections and said screw and nut means, each of said coves lying generally perpendicular to a line extending from said screw means to said hinge means, each of said coves further having a cross section which generally corresponds to the cross section of slightly less than one-half of said rail so that an unobstructed straight section of said rail is snugly and tightly gripped between said massive blocks when said screw means is tightened responsive to said finger pressure, a resilient shock absorbant friction causing means positioned in the bottom of at least one of said coves for enhancing friction and for further reducing vibrations transmitted from the rail to said mount, and mounting means formed in at least one of said massive blocks for universally enabling gear to be clamped securely to said one massive block while said mount is secured to a rail.

4,338,876
APPLICATION OF LIQUIDS TO TEXTILES

David E. P. Norton, Macclesfield, England, assignor to Sir James Farmer Norton & Company Limited, Manchester, England

Filed Jul. 2, 1980, Ser. No. 165,437
Claims priority, application United Kingdom, Jul. 5, 1979, 7923500
Int. Cl.³ D06B *1/02*
U.S. Cl. 118—259 **9 Claims**



1. An apparatus for applying liquid to a moving fabric, comprising:

a fabric treatment chamber;

roller means within the treatment chamber for guiding the fabric passing through the chamber so that the fabric follows at least one vertical path;

a plurality of adjacent side-by-side liquid delivery spinning discs rotatable about vertical axes, the discs being arranged across a width of the fabric adjacent the at least one vertical path;

a delivery pipe mounted directly above a center of each spinning disc for supplying liquid to each disc, the spinning discs centrifugally impelling the liquid in the form of a fine mist-like spray uniformly across the fabric width with each spinning disc forming a pattern on the fabric;

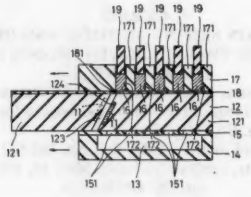
a baffle located at each side of each spinning disc and being between adjacent spinning discs to control a degree of overlap between the spray patterns created by adjacent spinning discs, the baffles of each spinning disc being diametrically opposed and longitudinally displaced relative to one another in the direction of the fabric width; and

means for adjustably mounting each baffle relative to its spinning disc to permit the baffle to be adjusted so that each baffle can be moved closer to or further away from its disc and can also be moved lateral to its disc in the widthwise direction of the fabric to permit variation of spray pattern overlap control.

4,338,877
APPARATUS FOR MAKING SEMICONDUCTOR DEVICES

Haruyoshi Yamanaka, Takarazuka, and Masaru Kazumura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Oct. 12, 1979, Ser. No. 84,297
Claims priority, application Japan, Oct. 20, 1978, 53-129615
Int. Cl.³ B05C *3/09*
U.S. Cl. 118—421 **10 Claims**



1. An apparatus for making semiconductor devices comprising a block having one slot hole which includes at least one space for holding a semiconductor substrate therein, a solution container which has a predetermined number of holes with separating wall parts for isolation of said holes from each other to contain semiconductor solutions therein, said at least one space being formed in said slot hole, which is defined by two substantially parallel walls disposed at an angle with respect to a horizontal plane, said slot hole having a solution inlet at its top and a solution outlet at its bottom, said at least one space being disposed in a manner to hold said semiconductor substrate with its principal face substantially parallel to the walls of said slot hole, characterized in that

said solution container is movably disposed on said block in a manner to sequentially dispose said one slot hole under one of said holes containing one of said semiconductor solutions and sequentially pour said semiconductor solutions into said slot hole from selected ones of said holes,

a movable outlet sheet having a predetermined number of outlet through-holes corresponding to the predetermined number of holes in the solution container to be sequentially disposed under said solution outlet and connected to said solution container, thereby discharging one of said semiconductor solutions out of said slot hole when one of said separating wall parts closes said solution inlet,

said block having secured thereto a cover sheet having one inlet through-hole superimposed on said solution inlet for being sequentially disposed under one of said holes containing said semiconductor solutions, which solutions fall down into said slot hole by gravity, said movable outlet sheet **(15)** with said predetermined number of outlet

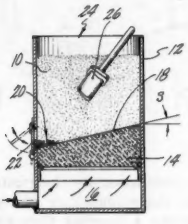
through-holes (151) being provided so as to control discharging of said solutions from said slot hole (123) with the capacity of each of said holes (172) in said solution container being larger than the capacity of said slot hole (123) thereby allowing said solution (16) to extend upwards continuously to the lower part of said hole (172) when a solution (16) is led into said slot hole (123).

4,338,878

FLUIDIZED BED WITH SLOPED APERTURE PLATE

Kenneth R. Mason, Wethersfield, and Edward G. Day, Rocky Hill, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 26, 1980, Ser. No. 210,482
Int. Cl.³ B05C *19/02*
U.S. Cl. 118—429 8 Claims



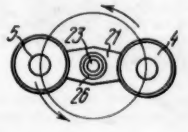
1. A fluidized bed apparatus adapted to contain a mass of fine particles having desired characteristics, characterized by an aperture plate with its upper surface postioned at an incline with respect to a horizontal plane, the incline sufficient to cause undesired particles, which because of their size or mass tend not to be fluidized within the desired fine particles, to migrate to a collection point from which they may be removed from the apparatus; and means for regulating the flow through the aperture plate, the means providing a fluid pressure at the upper surface of the aperture plate which varies according to the height of particles containable above the plate, so that fluidization in the horizontal plane of the fluidized bed is relatively uniform.

4,338,879

APPARATUS FOR APPLYING ENAMEL SLIP TO PIPE

Anatoly E. Makeev, ulitsa Chekhova, 79, kv. 14, Rostov-na-Donu, and Alexandr A. Sirotinsky, Fergansky proezd, 13, korpus 1, kv. 15, Moscow, both of U.S.S.R.

Filed Jan. 18, 1981, Ser. No. 223,431
Claims priority, application U.S.S.R., Mar. 30, 1978, 2596057
Int. Cl.³ B05C *3/10*
U.S. Cl. 118—602 7 Claims



1. Apparatus for applying enamel slip to a walled pipe, comprising:

at least one housing designed to be filled with enamel slip;

pump means for supplying enamel slip to said housing;

a rod centrally mounted in said housing;

said housing and said rod forming therebetween a clearance space to be filled with enamel slip;

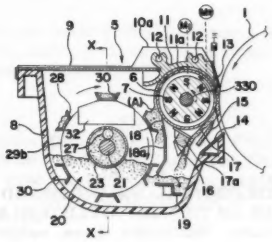
and a mechanism for moving said pipe in said clearance space.

4,338,880

MAGNETIC BRUSH DEVELOPMENT APPARATUS FOR USE IN ELECTROPHOTOGRAPHIC COPYING MACHINE

Kenji Tabuchi; Susumu Tanaka; Kenichi Wada, and Tateki Oka, all of Sakai, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Sep. 11, 1979, Ser. No. 74,812
Claims priority, application Japan, Sep. 19, 1978, 53-115252; Sep. 19, 1978, 53-115253; Sep. 19, 1978, 53-115254; Sep. 19, 1978, 53-115377
Int. Cl.³ G03G *15/09*
U.S. Cl. 118—652 15 Claims



1. A magnetic brush development apparatus for use in an electrophotographic copying machine for developing an electrostatic latent image, said apparatus being of the type for using a developer which is constituted by non-magnetizable particles and magnetizable particles with the diameters of the respective particles being approximately the same, said apparatus comprising:

a developing casing having a developer powder supply position and a developer powder delivery position at which the developer powder is applied to the latent image;

a developing sleeve rotatably mounted in said developing casing with said positions being spaced around said sleeve, said sleeve being rotatable in a direction for moving the peripheral surface from said delivery position along a delivery path for the developer to said supply position in a direction opposite to the direction of movement of the developer along the delivery path around said sleeve from the supply position to the delivery position;

a multipolar magnet member rotatably accommodated in said developing sleeve, said multipolar magnet member being rotatable in the same direction as said developing sleeve for transporting developing material affected by said magnet member around said sleeve in a direction opposite to the direction of rotation of said sleeve and said magnet member;

driving means connected to said sleeve and to said magnet member for driving said sleeve and said magnet member and driving said magnet member at a much higher speed of rotation than the speed of rotation of said developing sleeve for moving the affected developer along said delivery path;

a least one cleaning member positioned along the portion of the periphery of said sleeve which is moving from said supply position to said delivery position, said cleaning member being urged into contact with the surface of said sleeve and directed in a direction opposite to the direction of rotation of said sleeve for removing part of the developer adhering to said sleeve and which is at most only slightly affected by said magnet member and transported in the direction of rotation of said sleeve; and

at least one scraping member positioned along the portion of

the periphery of said sleeve which is moving from said supply position to said delivery position and positioned between said cleaning member and said delivery position for scraping the affected developer from said surface of said sleeve, and said scraping member having a forward end portion urged into contact with said surface of said sleeve and directed in the direction of rotation of said developing sleeve, the forward end portion of said scraping member having a resiliency for being lightly pressed against said sleeve and for being movable away from the peripheral surface of the developing sleeve by the remaining slightly affected developer for forming a gap between said peripheral surface of the sleeve and said forward end, whereby the slightly affected developer is passed through said gap and does not accumulate between said scraping member and said sleeve.

4,338,881

SYSTEM FOR CONTROLLING WIDTH AND POSITION OF GLUE OR THE LIKE APPLIED TO A ROLL

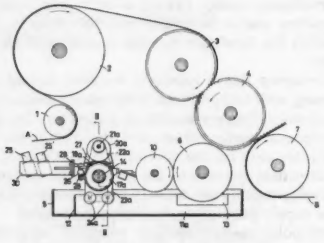
Masateru Tokuno, Nishinomiya, Japan, assignor to Rengo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 219,536, Dec. 23, 1980, abandoned, which is a continuation of Ser. No. 65,742, Aug. 10, 1979, abandoned. This application Feb. 23, 1981, Ser. No. 237,412

Claims priority, application Japan, Aug. 25, 1978, 53-117146

Int. Cl.³ B05C *1/08*

U.S. Cl. 118—673 **4 Claims**



1. Apparatus for controlling the width and position of application of a liquid material such as glue or the like from a pan containing the material to a roll immersed in said pan so that the roll can apply the material to a running web, said apparatus comprising: a pair of dams for immersion in the material in said pan for confining the material in the pan between said dams, the roll being across said dams and extending below the level of the tops of the dams, said dams being movable in said pan in the direction of the length of said roll; sensor means for sensing any displacement of said running web laterally thereof or a change in the width thereof; a pair of reversible motors connected to said sensor means and actuated in response to the sensing by said sensor means of a displacement or change in width of the running web; and a threaded shaft and nut means coupled between each motor and a corresponding dam and said motors being connected thereto for producing relative rotation of said threaded shaft and nut means for moving the corresponding dam to a new position according to the displacement or change in width of the running web.

4,338,882

PLASTICIZER INSTALLATION FOR THE TREATMENT OF A ROPE OF FIBRES

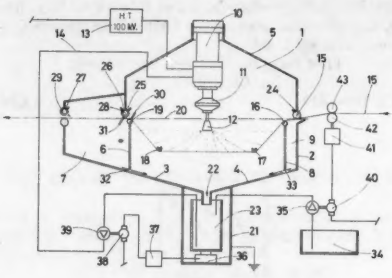
Guy Siggen, Juriens, and Michel Berney, Bavois, both of Switzerland, assignors to Baumgartner Papiers S.A., Switzerland

Filed Sep. 29, 1980, Ser. No. 191,419

Claims priority, application Switzerland, Jan. 30, 1980, 737/80

Int. Cl.³ B05B *5/02*

U.S. Cl. 118—674 **6 Claims**



1. A plasticizer installation for the treatment of a rope of fibres intended for the manufacture of cigarette filters, the installation comprising a chamber through which the rope, spread out in the form of a sheet, is moved continuously in front of a device for spraying liquid plasticizer, which device comprises a turbine and a spray head connected to a source of D.C. voltage and located above the path of the rope, the chamber being connected to earth and housing means for guiding the rope, which means are arranged such that the rope is deflected below a truly rectilinear path, and the spray head being located below said truly rectilinear path.

4,338,883

VACUUM VAPOR-DEPOSITION INSTALLATION WITH A VACUUM CHAMBER, A VAPORIZING CHAMBER AND AN EVAPORIZING CHAMBER

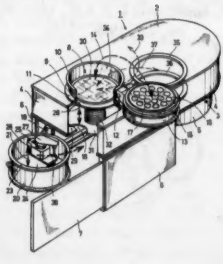
Peter Mahler, Obertshausen, Fed. Rep. of Germany, assignor to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Aug. 25, 1980, Ser. No. 181,456

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1979, 2940064

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—719 **4 Claims**



1. In a vacuum vapour-deposition installation for batch-wise operation having a valve chamber with a suction opening for producing a vacuum, an upward directed first opening for vacuum-tight connection with a removable vaporizing chamber, and a downwardly directed second opening for connection with an evaporizing chamber, the first and the second

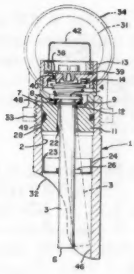
openings being substantially in alignment and each being surrounded by a valve seat towards the valve chamber and a two-way valve which is horizontally movable in the valve chamber with two valve discs which can be moved apart, the improvement comprising means permitting access to the interior of the evaporizing chamber from the exterior without interrupting the vacuum in the valve chamber.

4,338,884

ANIMAL BITE VALVE

Frank W. Atchley; Donald W. Vorbeck, and Ronald L. Wurz, all of Napa, Calif., assignors to ATCO Manufacturing Co., Inc., Napa, Calif.

Filed Mar. 9, 1981, Ser. No. 241,645
Int. Cl.³ A01K *7/06*
U.S. Cl. 119—72.5 **9 Claims**



1. An animal bite valve comprising:
a. a housing formed with an opening therethrough.
b. non-flexible fulcrum means mounted within said housing;
c. an elongated valve lever mounted in said housing having an inner end and a distal end, and having an inflexible flange formed with a fulcrum edge on its rim and positioned for tilting registration with said non-flexible fulcrum means and an annular channel formed therein between said inflexible flange and said inner end;
d. valve seat means having an annular land mounted in said housing;
e. a flexible cup seal member having an annular base registering with said annular channel for mounting on said lever for tilting movement therewith and having an annular wall extending from said base beyond said fulcrum edge of said inflexible flange for sealing and unsealing engagement with said annular land on said valve seat means; and
f. biasing means mounted in said housing biasing said inflexible flange on said valve lever into engagement with said non-flexible fulcrum means.

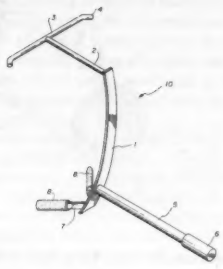
4,338,885

CATTLE HEAD HOLDER

Jasper A. Van Vliet, 3930 Claus Rd., and James E. Elder, 1443 Albers Rd., both of Modesto, Calif. 95355

Filed Dec. 3, 1980, Ser. No. 212,689
Int. Cl.³ A01K *29/00*
U.S. Cl. 119—96 **8 Claims**

1. A device for holding the head of livestock and the like which head extends through laterally translatable rails comprising, in combination:
pivoting means on said device for moving said device about a horizontal axis between two of the rails,
snout means on said device for engaging the snout of the livestock,
and lever means on said device for forcing the head of the livestock to be constrained and stilled against the rails by exerting pressure on said snout means through said lever means while pivoting about said pivot means, whereby the head of the livestock can be worked on as by dehorning, medicating or the like, wherein said device includes an arcuate, elongate strip of material from which said pivoting, snout, and lever means extend and are supported,



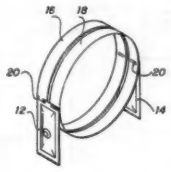
wherein said pivoting means comprises a T-shaped rod extending rearwardly from an upper portion of said strip on a concave surface thereof.

4,338,886

PREDATOR CONTROL TOXIC COLLAR

Roy T. McBride, P.O. Box 725, Alpine, Tex. 79830

Filed Dec. 31, 1980, Ser. No. 221,819
Int. Cl.³ A01K *27/00, 29/00*
U.S. Cl. 119—106 **15 Claims**



1. A predator control collar for protecting livestock by repelling or killing predators with a predicide, comprising:
a pair of sealed pouches forming leakproof containers for a predicide, said pouches being rupturable by a predator to release the predicide; and
a collar supporting said pouches about the neck region of the livestock, said collar including means for expanding in circumference as the neck size of the livestock increases during its growth, whereby the collar may be initially placed upon a young livestock and remain in place to repel or kill a predator until the livestock has fully grown for market.

4,338,887

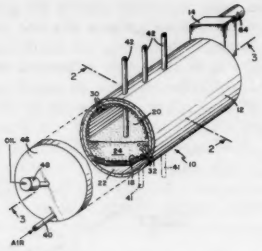
LOW PROFILE FLUID BED HEATER OR VAPORIZER

Albert M. Leon, Mamaroneck, N.Y., assignor to Dorr-Oliver Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 79,569, Sep. 27, 1979, abandoned. This application Aug. 27, 1980, Ser. No. 181,900
Int. Cl.³ B09B *3/00*
U.S. Cl. 122—4 D **22 Claims**

1. A fluid bed heater or vaporizer comprising an enclosed vessel having means for introducing an oxygen-containing gas into the lower portion of said vessel to fluidize a body of particulate solids forming a fluidized bed within said vessel, heat exchange tubes within said vessel including convection/-radiation heat exchange tubes in the freeboard above said fluidized bed and in-bed heat exchange tubes within said fluidized bed, means for regulating the supply of gas into said vessel to provide in the fluidized bed a combustion zone of high

turbulence and low density and at least one heat transfer zone of relatively low turbulence and high density, said combustion



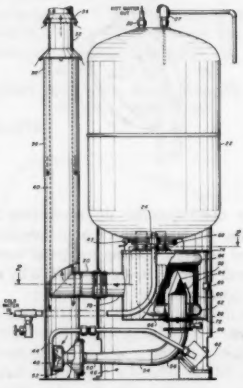
zone and said heat transfer zone being in free-flow communication with each other and said in-bed heat exchange tubes being located in said heat transfer zone.

4,338,888

HIGH EFFICIENCY WATER HEATING SYSTEM

Joseph Gerstmann, Framingham, and Andrew D. Vasilakis, Bedford, both of Mass., assignors to Advanced Mechanical Technology, Inc., Newton, Mass.

Filed May 14, 1980, Ser. No. 149,937
Int. Cl.³ F22B *5/00*
U.S. Cl. 122—16 **12 Claims**



1. A storage water heater of the type having an insulated water storage tank, a water inlet and a water outlet to and from the water heater, and a gas fueled combustion assembly in which gas initially at line pressure or less naturally mixes with combustion air and is ignited in a combustion chamber to heat water in the storage tank, the water heater characterized in that:

the combustion chamber is positioned below and external to the storage tank, the combustion chamber wall comprising a plurality of generally vertical riser tubes surrounding a burner and through which all of the products of combustion flow radially, the upper ends of the riser tubes being in fluid communication with the storage tank and the lower ends of the riser tubes being in fluid communication with the storage tank through at least one downcomer tube, the riser and downcomer tubes defining a heat exchanger water passage with high and low points in the passage in liquid communication with the interior of the storage tank for flow of water through the heat exchanger passage to the storage tank by natural convection;

a burner is surrounded by the riser tubes of the combustion chamber; and

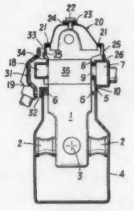
a fuel gas nozzle adjacent to the burner for supporting a pilot flame is positioned such that the pilot products of combustion flow in a strata past the riser tubes at the upper ends thereof, the heat imparted to the liquid in the heat exchange water passage being insufficient to cause significant convective flow within the passage throughout the length of the heat exchanger passage.

4,338,889

LOW-NOISE LEVEL INTERNAL COMBUSTION ENGINE

Karl Kirchweger; Heinz Fachbach, and Josef Greier, all of Graz, Austria, assignors to Hans List, Graz, Austria

Filed May 5, 1980, Ser. No. 146,276
Int. Cl.³ F02M *33/02*
U.S. Cl. 123—198 E **14 Claims**



1. In a low noise-level internal combustion engine which includes an engine unit support, a crankshaft mounted for rotation in said engine unit support, a cylinder head, an induction manifold for delivering air or an air/fuel mixture to said cylinder head, a rocker cover and a crankcase constructed to surround a portion of said engine unit support and extend upwardly to a level above said crankshaft, the improvement wherein at least one vibration-absorbing connector element is connected between said engine unit support and said crankcase, wherein a number of vibration-absorbing and sealing intermediate rings are positioned between said induction manifold and said cylinder head, and wherein said rocker cover is directly attached to said cylinder head by at least one vibration-absorbing attachment element, said rocker cover and said induction manifold being constructed so as to at least partially enclose said cylinder head and the portion of said engine unit support which extends upwardly above said crankcase, said rocker cover and said induction manifold acting to suppress the radiation of body resonance and sound vibration emanating from and around said cylinder head and said engine unit support.

4,338,890

HOOD, MUFFLER AND AIR CLEANER MODULE FOR AN INTERNAL COMBUSTION ENGINE

Robert L. Shelby, Chillicothe, and Douglas A. Wilkins, Wyoming, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

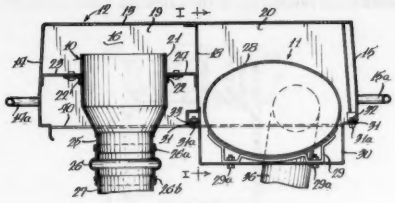
Continuation of Ser. No. 72,260, Jan. 31, 1979, abandoned. This application Dec. 29, 1980, Ser. No. 220,711
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—195 A **6 Claims**

1. In an upwardly open compartment (C) for an internal combustion engine (D) with an exhaust system having a manifold (M2) and having a muffler (11) above the engine (D), the improvement comprising:

a hood (12) detachably mounted on the compartment (C) in a position spaced above the engine (D), said hood providing a top closure for said compartment;

a muffler (11) for the exhaust system which has an exhaust intake pipe (36);

means (**29**, **29***a*, **30**, **31**, **31***a*) secured to the hood (**12**) supporting the muffler (**11**) onto the underside of the hood (**12**); and releasable means (**37**) detachably connecting the exhaust intake pipe (**36**) to the manifold (**38-M2**), said releasable means (**37**) being constructed and arranged to be released



with the hood (**12**) in position, wherein the hood (**12**), supporting means and muffler (**11**) constitute a module means removable from the upwardly open compartment (C) as a unit to leave the internal combustion engine (D) completely accessible from above.

4,338,891

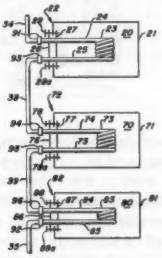
TEMPERATURE CONTROL SYSTEM FOR AUTOMOTIVE STORAGE COMPONENTS

James E. Blitz, 2832 Ross St., Highland, Ind. 46322

Division of Ser. No. 115,996, Jan. 28, 1980, Pat. No. 4,286,551. This application Oct. 20, 1980, Ser. No. 198,438

Int. Cl.[3] **F01P** *1/06, 3/12*

U.S. Cl. 123—41.31 **6 Claims**



1. A system for controlling the temperature of the contents of a multiplicity of storage vessels integral with an automotive transport unit, said automotive transport unit including a fluid-cooled internal combustion engine, during periods when said internal combustion engine is not in operation, comprising:

(a) a multiplicity of storage tanks, each having two end sections;

(b) a like number of generally coiled lengths of pipe, each length of pipe being disposed within a separate storage tank and having two end sections, each pipe end section sealably inserted through a common end section of the separate storage tank and fitted, externally to said tank end section, to receive conduit couplings;

(c) connective conduit means, coupled to respective pipe end sections and adapted to provide for serial flow through the multiplicity of coiled lengths of pipe;

(d) two terminal conduit means, each having two ends, each coupled at a first end to a respective terminal pipe end section, the first terminal conduit means having interposed along its length heating and pumping means and coupled at a second end to an inlet fluid coolant line, the second terminal conduit means coupled at a second end to an outlet fluid coolant line, said fluid coolant lines being normally in communication with the internal combustion engine;

(e) temperature sensing means attached to at least one of said storage tanks;

(f) valve means, inserted in the first terminal conduit means, operable responsively to the temperature sensing means;

(g) an external electrical power source for operating said heating and pumping means and valve means;

(h) a three-way cut-off valve positioned at the junction of said inlet fluid coolant line and said second end of said first terminal conduit means; and

(i) by-pass conduit means connecting the cut-off valve to the outlet fluid coolant line; whereby the fluid coolant can be optionally diverted from passage through the internal combustion engine, heated and pumped in response to the power source and temperature sensing means through at least the respective pipe coils and conduit means, to control and maintain the temperature of the contents of the respective storage vessels.

4,338,892

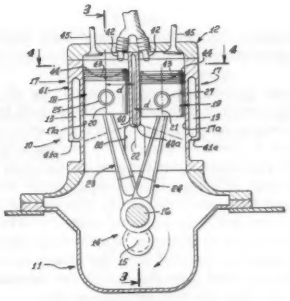
INTERNAL COMBUSTION ENGINE WITH SMOOTHED IGNITION

Russell P. Harshberger, P.O. Box 601, Pasadena, Calif. 91102

Filed Mar. 24, 1980, Ser. No. 133,013

Int. Cl.[3] **F02B** *75/26*

U.S. Cl. 123—54 A **1 Claim**



1. In an internal combustion engine having piston means reciprocable in cylinder means, a crankshaft having an axis, and connecting rod structure, the improvement comprising

(a) said cylinder means including two generally side-by-side cylinders, at least one cylinder having an axis out of intersecting alignment with the crankshaft axis,

(b) the piston means including two pistons respectively reciprocable in said two cylinders,

(c) the two pistons having connections to said crankshaft via said rod structure characterized in that one piston arrives at top dead center position while the other piston is near top dead center position,

(d) the crankshaft having a throw, the connecting rod structure include two connecting rods respectively connected with the two pistons, both said rods connected with said throw, in side-by-side relation,

(e) the other cylinder also having an axis out of intersecting alignment with the crankshaft axis, said cylinder axes defining a plane generally normal to the connecting rod axis,

(f) one connecting rod extending at a small negative angle relative to said plane, and the other connecting rod extending at a small positive angle relative to said plane,

(g) the engine having a common cylinder wall with a section extending between the two cylinders, that wall section containing a slot at the bottom thereof to pass the connecting rods,

(h) the cylinders having closed heads and the engine including

fuel injectors for Diesel operation, the injectors extending into said heads proximate and at opposite sides of said wall section, to direct injected fuel toward edge portions of cupped heads defined by the pistons,

(i) the injectors to receive fuel from a common source, and being arrayed in forked relation above and adjacent to said wall section.

4,338,893

DECOMPRESSION DEVICE

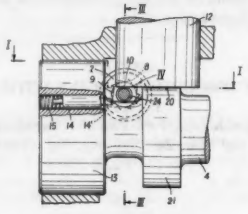
Colin T. Pomfret, and Fritz Freyn, both of Graz, Austria, assignors to Hans List, Graz, Austria

Filed Apr. 2, 1980, Ser. No. 136,669

Claims priority, application Austria, Apr. 19, 1979, 2971/79

Int. Cl.³ F01L *13/08*

U.S. Cl. 123—90.16 **12 Claims**



1. An internal combustion engine which includes an automatically discontinuing decompression mechanism, the engine including

an elongated camshaft which is rotated by the engine, the elongated camshaft including a shoulder part and a cam, the cam having an outer surface which in part is cylindrical in shape and in part lobe-shaped, the portion of the elongated camshaft extending from the side of the cam opposite the shoulder part defining a first (root) diameter and the portion of elongated camshaft extending between the cam and the shoulder part defining a second diameter which is smaller than the first (root) diameter, the shoulder including a bore which extends in parallel with the elongated camshaft, the bore being located from the axis of the camshaft a distance greater than half the first (root) diameter,

a transmitting member movably extending between said cam and a valve associated with a combustion chamber, the rotation of said camshaft causing the cam to move said transmitting member such that the valve to which said transmitting member is connected will open and close;

a rotatable, elongated decompression element, the elongated decompression element including

a control shaft,

a ratchet wheel which is interconnected with the control shaft, the ratchet wheel including a number of teeth and a circumferential portion which is tooth free, and

a decompression cam which is interconnected with the ratchet wheel, the decompression cam including a portion which has an outer surface which in part is cylindrical in shape and in part is flat, this portion of the decompression cam being located between the shoulder and the cam such that when rotated in order that its flat outer surface part faces the transmitting member, no contact therewith is made, but when rotated in order that its cylindrical outer surface part faces the transmitting member, contact therewith is made and the transmitting member is prevented from contacting the cylindrical outer surface part of the cam such that the associated valve is prevented from closing the associated combustion chamber, and

a shifting member located in the bore in the shoulder part of the elongated camshaft, the shifting member including a projecting portion which extends outwardly of the shoulder part to a point adjacent the ratchet wheel of the rotatable, elongated decompression element, the shifting member when rotated by the camshaft not contacting the ratchet wheel when the circumferential tooth-free portion of the ratchet wheel is opposite the projecting portion of the shifting member but otherwise contacting the teeth of the ratchet wheel to incrementally rotate the ratchet wheel and thus the decompression element as a whole with each revolution of the camshaft.

4,338,894

SELF-CONTAINED HYDRAULIC LASH ADJUSTER

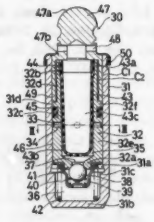
Hisashi Kodama, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 31,092, Apr. 18, 1979, abandoned. This application Jan. 29, 1981, Ser. No. 229,750

Claims priority, application Japan, Apr. 20, 1978, 53-53206[U]; Apr. 24, 1978, 53-54763[U]

Int. Cl.³ F01L *1/24*

U.S. Cl. 123—90.58 **3 Claims**

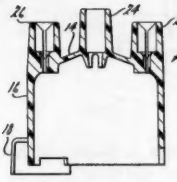


1. A self-contained lash adjuster comprising a body having an axially extending blind bore therein with an opening at one end and a closed wall at the other end, a plunger slidably mounted in said blind bore, a reservoir chamber located in said plunger, a pressure chamber disposed between said plunger and said closed wall of said body, a check valve for allowing fluid flow only from said reservoir chamber to said pressure chamber through an aperture in said plunger, a return spring disposed between said closed wall of said body and said plunger to bias said plunger in the direction of said opening of said body, a leakage clearance between the inner surface of said body and the outer surface of said plunger, an annular groove provided on said outer surface of said plunger, radial passage means extending through said plunger in communication with said groove to connect said leakage clearance to said reservoir chamber, a transmitting member slidably inserted between the inside of said body and the outside of said plunger adjacent the opening at one end of the body, sealing means providing a seal between said plunger and said body intermediate said groove and said transmitting member, said one end of said transmitting member disposed in engagement with a shoulder portion of said plunger, a tubular elastic bag fixed to said plunger within said reservoir chamber with the closed end thereof being normally disposed in contact with fluid in said reservoir chamber and the interior of said bag being disposed in communication with the atmosphere, said closed end of said bag extending past said radial passage means, and the clearance between the inner surface of said body and the outer surface of said transmitting member being smaller than the clearance between the inner surface of said transmitting member and the outer surface of said plunger.

4,338,895
INSERTLESS DISTRIBUTOR CAP

Ralph J. Lennis, Farmington Hills, and Ralph L. Handy, Troy, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Aug. 28, 1980, Ser. No. 182,179
Int. Cl.³ F02P *7/00*
U.S. Cl. 123—146.5 A **14 Claims**



1. A dome-shaped distributor cap having a plurality of axially extending tubular walled towers equally angularly spaced about the outer periphery and projecting from the domed end of the cap for reception of one end of a respective one of a like plurality of high tension ignition cables,

said cap having a like plurality of equally angularly spaced openings located in and extending through the dome of the cap and into the interior of a respective one of the tubular tower projections for reception of one end of a readily insertable and removable elongated terminal electrode attached at its other end to a respective one of said ignition cables,

each of said tubular walled tower projections characterized by camming guide means integrally formed on the inner wall thereof and cooperating with a cable terminal electrode for guiding insertion of said one end of a cable terminal electrode through an opening in the dome of the cap and into the interior of the cap during assembly of the electrode to the cap.

4,338,896
FIRE SUPPRESSION SYSTEM

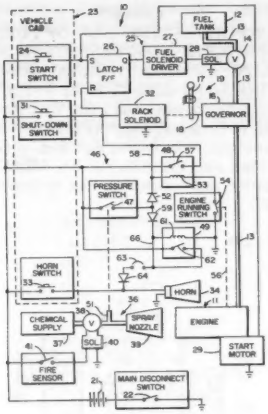
Stamos I. Papasideris, Bristol, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00267, § 371 Date Mar. 13, 1980, § 102(e) Date Mar. 13, 1980, PCT Pub. No. WO81/02609, PCT Pub. Date Sep. 17, 1981
PCT Filed Mar. 13, 1980, Ser. No. 195,720
Int. Cl.³ F02B *77/00*
U.S. Cl. 123—198 D **13 Claims**

1. An improvement in a fire suppression system (**10**) for a vehicle having an engine (**11**), a fuel tank (**12**), a fuel supply line (**13**) from said fuel tank **12** to said engine (**11**), flow-interrupting means (**14** or **19**) for shutting off flow of fuel through said flow line (**13**), a battery (**21**), a vehicle cab (**23**), a shut-down switch (**31**) located in said vehicle cab (**23**), said shut-down switch (**31**) being connected to said battery (**21**) and having a shut-down position, actuating means (**25** or **32**) for actuating said flow-interrupting means (**14** or **19**) to shut off flow of fuel through said fuel line (**13**) in response to movement of said shut-down switch (**31**) to its shut-down position, a manually-operable disconnect switch (**22**) connected in series with said battery (**21**) and located outside of said vehicle cab (**23**), and a fire extinguisher (**36**) located proximate to said engine (**11**), the improvement comprising:

a warning device (**34**),

connecting means (**46**) for causing said actuating means (**25** or **32**) to actuate said flow-interrupting means (**14** or **19**) to shut off flow of fuel through said fuel line (**13**) in response to operation of said fire extinguisher (**36**) and without movement of said shut-down switch (**31**) to its shut-down position, and for connecting said warning device (**34**) to said battery (**21**) in response to operation of said fire extinguisher (**36**) with such connection of said warning device

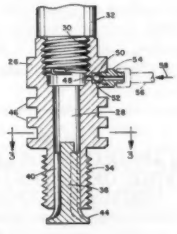


being maintained for as long as said disconnect switch is closed.

4,338,897
AUXILIARY PRECOMBUSTION CHAMBER AND COMBUSTION DISTRIBUTOR FOR AN INTERNAL COMBUSTION ENGINE

Dale G. Drumheller, 104 Willywood Ave., Oak Hill, W. Va. 25901; Robert M. Schell, 1719 Denstone Pl., Lemon Grove, Calif. 92045, and Edward O. Drumheller, 1835 E. Main St., El Cajon, Calif. 92021

Filed Aug. 6, 1980, Ser. No. 175,708
Int. Cl.³ F02B *19/10*
U.S. Cl. 123—267 **10 Claims**



1. An auxiliary combustion chamber for detachable mounting on a spark ignition internal combustion engine, said chamber comprising:

a generally cylindrical housing having a chamber therein defined by a generally cylindrical through bore, one open end of said bore communicating with said chamber and including internal threads adapted to receive a spark plug,

a generally cylindrical projection extending from said housing and having external threads for threadably engaging the spark plug bore in the head of an engine and including a generally cylindrical central core member mounted in said bore and including a flared cap having a rim defining a flame distributor for extending beyond the bore into the combustion chamber of an engine, and

a plurality of flame distribution ports defined by grooves in said core member and said cap and oriented for directing

flame exclusively across the combustion chamber transverse to the cylinder axis.

4,338,898

APPARATUS FOR DISTRIBUTION OF FUEL FROM AN INJECTION NOZZLE WITH RESPECT TO A PISTON IN AN AIR COMPRESSING INTERNAL COMBUSTION ENGINE WITH DIRECT FUEL INJECTION

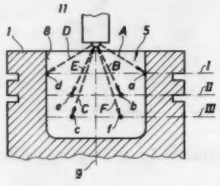
Richard Bauder, Neckarsulm, and Peter Will, Neuenstadt, both of Fed. Rep. of Germany, assignors to Audi Nsu Auto Union Aktiengesellschaft, Neckarsulm, Fed. Rep. of Germany

Filed Aug. 10, 1978, Ser. No. 932,651

Claims priority, application Fed. Rep. of Germany, Aug. 27, 1977, 2738687

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—279 **1 Claim**



1. In an air compressing internal combustion engine with direct fuel injection, comprising a cylinder with a cylinder head, a reciprocating piston in said cylinder, said piston having a rotation-symmetrical combustion chamber having a longitudinal axis and comprising an essentially cylindrical circumferential wall and a bottom wall perpendicular to said axis, in which the combustion air circulates around said axis at the moment of fuel injection, and an injection nozzle in said cylinder head from which the fuel is injected in at least two fuel jets into the combustion chamber, the improvement of means for distributing the points where the fuel jets hit the circumferential wall evenly over said wall and locating said points in different planes disposed perpendicular with respect to said axis and spaced from the open end and the bottom wall of the combustion chamber, and said nozzle being offset from said axis in such manner that the fuel jets are of substantially equal length.

4,338,899

METHOD AND APPARATUS FOR CONTROLLING THE IDLING OPERATION OF A SPARK-IGNITED INTERNAL COMBUSTION ENGINE

Istvan Geiger, Braunschweig; Klaus Stamm, Wolfsburg; Reinhard Brüning, Hamburg, and Manfred Meyer, Norderstedt, all of Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed May 31, 1979, Ser. No. 44,328

Claims priority, application Fed. Rep. of Germany, May 31, 1978, 2823711

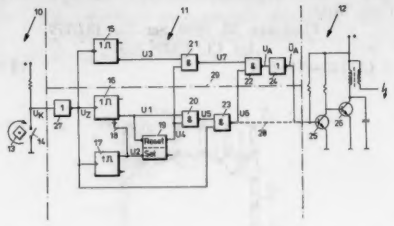
Int. Cl.³ F02P *5/04*

U.S. Cl. 123—339 **9 Claims**

1. A method for operating a spark-ignited internal combustion engine with ignition means and having nominal angular spacing of ignition pulses to stabilize the actual idle speed to be equal to a desired idle speed, said method comprising:

supplying said engine with a lean fuel-air mixture in the vicinity of said ignition means, said mixture having an air ratio exceeding the air ratio corresponding to a stoichiometric mixture, in a range wherein increased air ratio corresponds to decreased mean indicated pressure;

and controlling the ignition timing of said engine to linearly advance said timing from a relatively late condition in accordance with change in engine speed below the desired speed; said timing advance having the same ratio to said



engine speed change as the nominal ignition pulse spacing has to said desired idle speed.

4,338,900

FUEL METERING APPARATUS IN AN INTERNAL COMBUSTION ENGINE

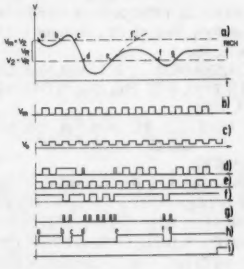
Peter Dilger, Neuried; Günter Hönig, Ditzingen, and Helmut Kauff, Schwieberdingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 9, 1980, Ser. No. 148,434

Claims priority, application Fed. Rep. of Germany, May 12, 1979, 2919194

Int. Cl.³ F02B *3/00*

U.S. Cl. 123—440 **20 Claims**



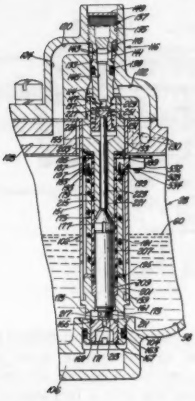
1. A fuel metering apparatus in an internal combustion engine, having a clocking means to provide clock pulses, a sensor for detecting a component of the mixture composition and generating a signal indicative thereof; a control circuit connected to the sensor for generating command signals dependent on the mixture component; a fuel metering circuit connected to the control circuit, wherein the output of the fuel metering circuit is corrected according to the command signals; wherein the control circuit has a single threshold switch that is connected to the clock clocking means and is alternated between a pair of threshold levels as a function of the clock pulses and wherein the control circuit includes a memory having a value stored therein, such that the value is altered in accordance with the dwell time of the sensor signal between predetermined levels.

4,338,901

APPARATUS AND SYSTEM FOR CONTROLLING THE AIR-FUEL RATIO SUPPLIED TO A COMBUSTION ENGINE

Ralph P. McCabe, Troy, Mich., assignor to Colt Industries Operating Corp, New York, N.Y.

Filed Oct. 24, 1980, Ser. No. 200,406
Int. Cl.[3] F02M *11/00, 7/18*
U.S. Cl. 123—440 12 Claims



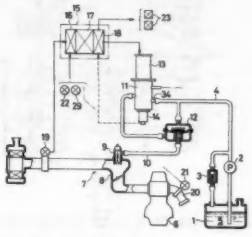
1. A fuel metering system for a combustion engine having engine exhaust conduit means, comprising fuel carbureting means for supplying metered fuel flow to said engine, said carbureting means comprising induction passage means for supplying motive fluid to said engine, a source of fuel, main fuel metering system means communicating generally between said source of fuel and said induction passage means, idle fuel metering system means communicating generally between said source of fuel and said induction passage means, controlled modulating valving means effective to controllably increase and decrease the rate of metered fuel flow through each of said main fuel metering system means and said idle fuel metering system means, oxygen sensor means effective for sensing the relative amount of oxygen present in engine exhaust gases flowing through said exhaust conduit means and producing in accordance therewith a first output, said modulating valving means comprising solenoid winding means for actuation of said modulating valving means, and electrical logic control means effective for receiving said first output signal and in response thereto producing a second output and effectively applying said second output to said solenoid winding means to thereby cause said modulating valving means to alter said rate of metered fuel flow through each of said main fuel metering system means and said idle fuel metering system means as to provide for rates of metered fuel flow therethrough ranging from a preselected "lean" fuel-air mixture ratio supplied to said engine to a preselected "rich" fuel-air mixture ratio supplied to the engine, said modulating valving means being effective upon occurrence of an electrical failure in said electrical logic control or said solenoid winding means to thereafter permit only that rate of metered fuel flow through each of said main fuel metering system means and said idle fuel metering system means as will result in said preselected "lean" fuel-air mixture ratio being supplied to said engine.

4,338,902

FUEL SUPPLYING DEVICE FOR INTERNAL COMBUSTION ENGINE

Hirokazu Nakamura, Kyoto; Bonnosuke Takamiya, Jyoyo; Takao Miki, Himeji, and Takashi Ishida, Ooi, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha; Mitsubishi Denki Kabushiki Kaisha and Mikuni Kogyo Kabushiki Kaisha, all of Tokyo, Japan

Filed Jul. 11, 1979, Ser. No. 56,670
Claims priority, application Japan, Jul. 14, 1978, 53/86371
Int. Cl.[3] F02D *3/02*
U.S. Cl. 123—454 10 Claims



1. In a fuel supplying device for an internal combustion engine comprising: a fuel supply passage for introducing fuel fed from a fuel pump at a substantially constant pressure to a fuel injector operative at a predetermined constant pressure, the improvement comprising: said fuel injector installed at a congregated portion of engine intake manifolds, a spool type metering valve including drive motor means receiving fuel from said fuel pump, a differential regulator receiving fuel from said fuel pump and said metering valve wherein a flow pressure drop to said fuel injector is maintained substantially constant by said differential regulator, said spool type metering valve being disposed in an intermediate portion of said fuel supply passage, calculating means including a servo signal generator for calculating an injection flow amount for a predetermined air/fuel ratio on the basis of signals of various engine running factors, said calculating means producing an operational signal output from said servo signal generating circuit to said drive motor means for driving said metering valve to thereby regulate fuel injected into the intake manifolds by said fuel injector, and a cooling air passage from the outside and a gas/liquid passage serving also as an exhaust passage for a leaking fuel are connected to each other between the drive motor means and the spool type metering valve and, an exhaust end of the gas/liquid passage is connected to a suitable portion of the intake system of the engine whereby cooling air and a fuel drain are absorbed at negative pressure.

4,338,903

ELECTRONIC CYLINDER IDENTIFICATION APPARATUS FOR SYNCHRONIZING FUEL INJECTION

Randy L. Bolinger, Schaumburg, Ill., assignor to Motorola Inc., Schaumburg, Ill.

Filed Sep. 2, 1980, Ser. No. 183,658
Int. Cl.[3] G01M *15/00*
U.S. Cl. 123—476 28 Claims

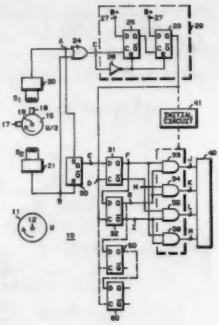
1. An electronic identification apparatus for identifying a predetermined rotational position of a rotating body, comprising:

a rotary body rotated about an axis and having a plurality of spaced apart peripheral portions angularly positioned within a rotational angle of less than 180 degrees about said axis;

a plurality of stationary sensors comprising at least a first sensor and a second sensor spaced 180 degrees of rotation apart about said axis, and positioned adjacent to said rotary body such that each of said sensors produces an

electrical signal pulse in response to the passage of each of said peripheral portions of said rotary body past said sensors; and

circuitry means coupled to said sensors for receiving said electrical signals from each of said sensors and effectively comparing signals indicative of which of said sensors is providing a present sensor signal pulse with signals indicative of which of said sensors provided the previous sensor



signal pulse that immediately preceded the present sensor signal pulse for providing at least one electrical output reference signal indicative of the occurrence of a single predetermined rotational position of said rotary body, whereby a small number of sensors is utilized to determine a predetermined angular position of said rotary body within a minimum amount of angular rotation of said rotary body.

4,338,904

DEVICE FOR DISTRIBUTING FUEL TO A COMBUSTION ENGINE

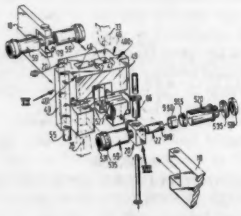
Willem Brinkman, Velp, Netherlands, assignor to Holec N.V., Utrecht, Netherlands

Filed Oct. 24, 1979, Ser. No. 87,719

Claims priority, application Netherlands, Oct. 25, 1978, 7810629

Int. Cl.³ F02M *39/02*

U.S. Cl. 123—499 **11 Claims**



1. A device for distributing fuel to a combustion engine, in which a pump chamber of a first fuel pump and a pump chamber of a second fuel pump are arranged coaxially at a distance from one another, can each be connected through an inlet valve with a fuel inlet and through a fuel outlet with an atomizer of the combustion engine and are bounded by a displacer body reciprocatorily driven by driving means, the displacer bodies being intercoupled by means of a coupling member arranged between the two fuel pumps and having stop means co-operating with at least one adjustable stop, which bears on a fixed stop support, the fuel chambers being bounded by pump sleeves arranged in coaxial bores in the two ends of a bridge piece, the two ends of which are interconnected by at least one intermediate piece, characterized in that the bridge piece and the fixed stop support are integral so as to form part of one and the same monolith, said monolith being provided with aligning means for fixing the position of the stop support with respect to control-means for setting the stop.

4,338,905

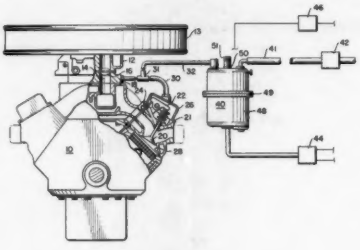
METHOD AND APPARATUS FOR PRODUCING AND SUPPLYING ATOMIZED FUEL TO AN INTERNAL COMBUSTION ENGINE

Carl L. Urich, 7293 S. Sherman St., Littleton, Colo. 80122

Filed May 1, 1980, Ser. No. 145,605

Int. Cl.³ F02M *21/02, 17/26*

U.S. Cl. 123—525 **14 Claims**



1. Apparatus for producing vaporized fuel and for supplying the vaporized fuel to combustion areas of a carburetor-equipped internal combustion engine, wherein said carburetor is supplied with fluid fuel from a fuel source, comprising:

branch means for additionally supplying said fluid fuel to said apparatus,

a container including means defining a vapor chamber therein,

inlet valve means for controlling fuel flow from said branch means into said container,

pressure regulator means in fluid communication with said inlet valve means for maintaining the pressure of fuel flow in said container at a predetermined value,

metering means in fluid communication with said pressure regulator and for supplying fuel droplets to said vapor chamber at a selected rate,

vapor producing means in said vapor chamber for converting said fuel droplets to a vapor of atomized particles, and

outlet valve means in fluid communication with said vapor chamber for supplying the vapor therein to said internal combustion engine.

4,338,906

FUEL CHARGE PREHEATER

Nathan Cox, 1517 40th St., Lubbock, Tex. 79412

Filed Oct. 29, 1979, Ser. No. 89,234

Int. Cl.³ F02M *31/00*

U.S. Cl. 123—545 **7 Claims**

1. A preheater for heating a fuel and air charge mixture intended for use in a system that converts the chemical energy of the charge to useful heat energy by combustion comprising:

an outer shell having a heated gas inlet, a heated gas outlet and a charge flow opening;

an inner shell supported within the outer shell in spaced apart relationship for providing a heated gas flow path between the shells;

said inner shell having an open charge inlet end, an opposite closed end located adjacent and facing said heated gas inlet, and a side outlet port adjacent said charge inlet end;

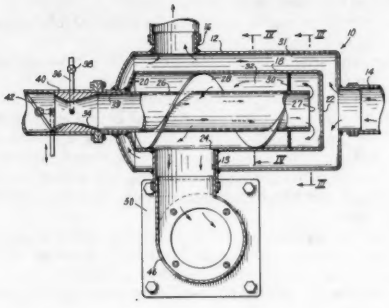
a charge inlet conduit extending within said inner shell and supported in spaced apart relationship relative thereto, said charge inlet conduit extending through said inner

shell open inlet and terminating at its distal end opening adjacent said inner shell closed end;

said inner shell and charge inlet conduit being connected together in sealed relationship at the inlet end area of said inner shell so that a charge flow path is provided in the space between said charge inlet conduit and said inner shell, said charge flow path including said side outlet port in said inner shell;

a connector duct connecting said side outlet port to said side opening in said outer shell;

a helical guide vane extending along said charge flow path between said inlet ends of said inner shell and a point near



the distal end of said charge inlet conduit, said vane extending along the exterior surface of said charge supply conduit, and in close fitting engagement with the outer and inner surfaces respectively of said charge supply conduit and said inner shell;

whereby charge mixture may be transported through said charge inlet conduit, adjacent said closed end area of said inner shell, and through the charge flow path in a helical path along said vane in a direction parallel to the incoming direction of said charge, and out through said side opening in said outer shell; and further whereby heated gas may be circulated through said heated gas flow path from the closed end of said inner shell to said inlet end thereof.

4,338,907

GASOLINE FUME GENERATOR AND MIXER

Laurel B. Lindbeck, 1466D Rte. #1, Las Cruces, N. Mex. 88001

Filed Aug. 28, 1981, Ser. No. 297,382
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—557 **10 Claims**

1. A gasoline fume generator and mixer for use with an internal combustion engine, said fume generator and mixer comprising:

a generator tank having a bottom, side walls and a separable cover;

a liquid riser pipe extending upwardly from said bottom of said tank, said riser pipe being supplied with liquid gasoline at a point adjacent said tank bottom;

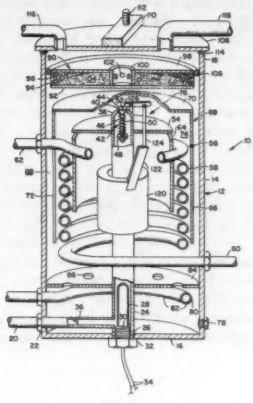
a metering valve in an orifice at an upper end of said riser pipe for regulating flow of the gasoline out of said riser pipe;

a heat exchange unit spaced from, and surrounding said riser pipe, said heat exchange unit passing hot liquid coolant from the engine therethrough;

means defining a first annular flow passage for said fuel, said heat exchange unit being positioned in said first annular flow passage, said liquid gasoline contacting said heat exchange unit to generate fumes;

means for supplying air to said tank, said air mixing with said fumes and passing through an outer annular passage to an exit in said cover; and

a fume filter interposed between said outer annular passage and said cover, said fumes and air passing through said



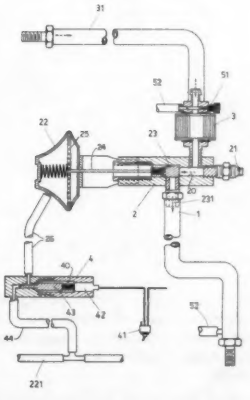
filter for mixing and removal of entrained liquid particles in said fume and air mixture.

4,338,908

OIL SAVER FOR VEHICLES

Ming-Ching Trong, 2nd Fl., No. 63, Lane 194, Sung Chiang Rd., Taipei, Taiwan

Filed Aug. 29, 1980, Ser. No. 182,582
Int. Cl.³ F02M *25/06*
U.S. Cl. 123—572 **2 Claims**



1. An apparatus for recovering a certain amount of fuel-air mixture exhausted out of clearances between piston rings and an inner wall of a cylinder provided in an automobile during compression cycle and sending the recovered mixture into an intake manifold of the automobile engine, which comprises,

an air cleaner communicated with an exhaust hole provided on the cylinder,

a controlling device having a through way therein whose one end is communicated with said air cleaner and the other end is communicated with the intake manifold of the automobile engine, an adjusting screw positioned within the through way for determining a communicating opening between said air cleaner and the through way, and a movable blocking mechanism partially positioned within

the through way for controlling a communicating opening between the through way and the intake manifold, and

a switching device having a through way therein whose one end is communicated with the blocking mechanism of said controlling device and the other end is communicated with a vacuum pipe connecting a carburetor with a distributor, and a movable block normally positioned within the through way to close the communication between the vacuum pipe and the blocking mechanism of said controlling device and driven by an electrical magnet which is actuated by a battery and controlled by a switch,

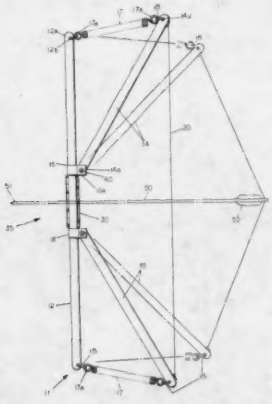
whereby when the temperature of the engine reaches a proper value one may turn on the switch to open the through way of said swiching device so that the blocking mechanism of said controlling device can move backwards by a suction force generated by the vacuum pipe to open the communicating opening between the through way of said controlling device and the intake manifold thereby the fuel-air mixture exhausted from the clearances between the piston rings and the inner wall of the cylinder with a certain amount of air from the atmosphere will flow through said air cleaner into the intake manifold for reuse.

4,338,909

ARCHERY BOW CONSTRUCTION

Marvin E. Plummer, 615 N. Decant Rd., Oregon, Ohio 43616

Filed May 7, 1980, Ser. No. 147,389
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—16 **7 Claims**



1. An archery bow construction for propelling an arrow and embodying features of constructional simplicity, lightweight and compactness, said construction comprising:

a primary elongate beam member formed of lightweight tubular stock,

first and second lever arms formed of lightweight tubular stock,

means for securing said arms to said beam member in pivotal, adjustable, facily removable and spaced relationship on either side of the center of said elongate member as to define a hand-hold region,

a tubular member telescopically surrounding said region for maintaining said spaced relationship between said lever arms,

a bow string connecting the distal ends of said lever arms,

first and second spring means connecting the distal ends of said lever arms to the adjacent distal ends of said elongate beam member,

said spring means and bow string being adjusted and arranged so that springs and string are in tension but still allowing the bow string to be extended away from said elongate beam member causing angular, pivotal movement of said lever arms to define a lesser included angle and contemporaneous tensional extension of said first and second spring means, whereby sudden release of said bow string will allow contraction of said spring means to propel said arrow as urged by said bow string and recoiling spaced spring means and guided by said primary elongate beam member.

7. A "kit" composed of a plurality of interrelated parts in packaged array suitable for assembly to form an archery bow embodying features of constructional simplicity, light weight and compactness; said "kit" comprising

means to enclose or surround said parts to form a package and said parts being located therein;

a primary elongate beam member formed of lightweight tubular stock,

first and second lever arms formed of light-weight tubular stock,

a pair of split circular bands, each having end ear portions adapted to embrace an end of one of said lever arms, said ear portions and said lever arm ends being provided with holes which, in registry, receive an elongate bolt and nut assembly to tighten said lever arms and assembly onto said beam member in spaced relationship to define a hand-hold region,

a tubular member telescopically surrounding said region, for maintaining said spaced relationship between said split circular bands and connected lever arms,

a bow string adapted to connect the distal ends of said lever arms, and

first and second spring means adapted to connect the distal ends of said lever arms to the adjacent distal ends of said elongate beam member,

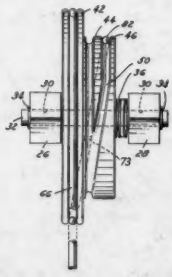
said bow string being adapted to be attached to the distal ends of the respective lever arms, the attaching of the bow string placing the bow in a strung and tensioned condition, pivotal movement of said assembled lever arms, upon drawing of said bow string, tensioning said first and second spring means, and upon sudden release of said assembled bow string said springs propelling an arrow.

4,338,910

COMPOUND BOW WITH CENTER TENSION PULLEY

Rex F. Darlington, 3540 Darton Rd., Hale, Mich. 48739

Filed Mar. 27, 1980, Ser. No. 134,195
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—24 R **6 Claims**



1. In a compound archery bow having:

(1) a handle member,

(2) a pair of bow limbs projecting from opposite ends of the handle member and terminating in a distal end,

(3) an eccentrically mounted pulley unit on a shaft at the distal end of each bow limb,

(4) an anchor point at each distal end of each bow limb adjacent each pulley unit, and

(5) a bowstring cable with each end connected to an anchor point at the respective distal ends of each bow limb, that improvement which comprises:

(a) a pair of pulley units having three axially spaced peripheral pulley grooves, including a first groove, and a third groove, and a second groove between said first and third grooves, and means forming a diametrical cable cross passage between the first groove and the third groove,

(b) a peripheral cross-over switch groove on said pulley between said third groove and said second groove, and

(c) a combination pulley cable and bowstring having a bowstring portion passing at one end around first groove at a first end of the bow and through said diametrical cross-passage to said third groove at said first end of the bow and thence to the anchor point at the second end of the bow, and the other end of said bowstring passing around first groove at the second end of said bow and through said diametrical passage to said third groove and then to the anchor point at the first end of the bow,

(d) said cross-over switch groove being positioned between said third groove and said second groove whereupon rotation of said pulley units caused by a drawing of said bowstring will cause said cable to track from said third groove to said second groove so as to reduce torsion in the bow during a drawing operation by centralizing the cable on the first and second pulleys.

4,338,911

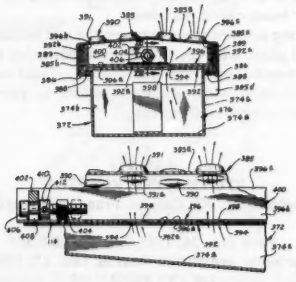
COOKING APPARATUS

Donald P. Smith, 4530 Woodfin Dr., Dallas, Tex. 75220

Division of Ser. No. 687,982, May 19, 1976, Pat. No. 4,154,861. This application Mar. 16, 1979, Ser. No. 20,970

Int. Cl.³ A21B *1/00*

U.S. Cl. 126—21 A **2 Claims**



1. Apparatus for heating a food product comprising: a cabinet; a conveyor arranged in said cabinet; means to drive said conveyor; a plurality of jet plates secured in said cabinet above and below said conveyor, each of said plates having a plurality of spaced apertures extending through the surface thereof; means to deliver heated pressurized fluid; a plenum which communicates with the means to deliver heated pressurized fluid; a plurality of tapered ducts communicating with said plenum, each said duct being adapted to direct the heated pressurized fluid to at least one of said jet plates to direct the heated pressurized fluid through the apertures in each of said plates for forming columnated jets of air to wipe away the boundary layer of air and moisture from localized portions of the surface of the food product when impinging upon the food product and thereby transfer heat to the food product to brown the food product.

4,338,912

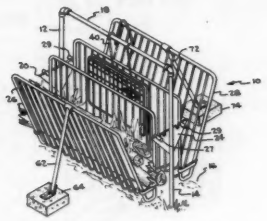
OUTDOOR COOKING GRILL

Thomas Gaskins, Palmdale, Fla. 33944

Filed Jul. 2, 1980, Ser. No. 165,947

Int. Cl.³ F24B *3/00*; F24C *1/16*; F47J *37/00*

U.S. Cl. 126—25 A **1 Claim**



1. A cooking apparatus comprising a support member,

vertically extending food holding means connected to and supported by said support member for holding food to be cooked;

first and second V-shaped vertically extending fire grates positioned and pivotally supported on opposite sides of said food holding means for holding first and second cooking fires; and

adjustment means for pivotally adjusting the position of the fire grates with respect to the food holding means;

wherein said food holding means comprises first and second vertically extending wire grill panels and clip connector means for detachably connecting said first and second wire grill panels for permitting food to be positioned between the grill panels for cooking and for constantly urging said first and second wire grill members toward each other through a substantial range of relative movement for permitting food portions of varying thicknesses to be retained in position between said grill panels;

wherein said connector means comprises a V-shaped holding clip having a through portion extending through openings in said first and second vertically extending wire grill panels and also having retainer arms limiting the extent of movement of the through portions in a first direction through said panels and a spring clip member having a spring arm engageable with said through portion for urging said first and second grill panels toward each other as a result of reactive force exerted between said V-shaped holding clip and said spring clip;

wherein said support member comprises first and second vertically extending post members and a horizontal carrier beam extending between and supported by said first and second vertically extending post members and additionally including carrier brackets on each of said vertically extending post members for partially supporting said first and second fire grates; and

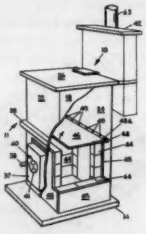
wherein said carrier brackets include open slots along an upper surface thereof, each of said grates including lug means selectively positionable in said open slots for adjusting the inward position of the fire grates with respect to the food holding means and support brace means connected to the outer side of said fire grates at an upper end and connected at a lower end to a movable ground engaging anchor block which can be moved inwardly or outwardly for adjusting the angular orientation of the fire grates with respect to the food carrier means.

4,338,913

SOLID FUEL BURNING STOVE

Lewis D. Good, 7579 100th St., Caledonia, Mich. 49316

Filed Mar. 17, 1980, Ser. No. 130,828
Int. Cl.³ F24C *1/14*
U.S. Cl. 126—77 **22 Claims**



1. A solid fuel burning stove comprising:

a firebox including side, end and top walls and a base for supporting fuel thereon, said walls and base defining an enclosed body;

said firebox including

refractory means disposed about a portion of said side and end walls for inhibiting heat transmission therethrough;

a primary combustion chamber in which said fuel is burned, said primary chamber having primary air intake means for supplying combustion air to said chamber;

a secondary combustion chamber in communication with said primary combustion chamber, said secondary chamber having secondary air intake means for supplying combustion air to said chamber so that volatile gases released by fuel burned in said primary combustion chamber are burned therein;

said secondary air intake means supplying combustion air to said volatile gases;

baffle means for directing flow of combustion air across the top of fuel in said primary chamber for combusting fuel therein and mixing with said volatile gases and for controlling the flow of said volatile gases from said primary combustion chamber to said secondary combustion chamber;

said baffle means being a horizontally disposed sheet extending across said firebox so as to define said first and second combustion chambers in said firebox;

said baffle means directing said volatile gases across said fuel burning in said primary combustion chamber to thereby maintain said gases at a high temperature; and

means for regulating exhaust gas flow from said secondary chamber to a smoke outlet, said means including a flow diverter which reduces the velocity of the exhaust gases to thereby increase the amount of heat recovered from the gases when exiting the secondary chamber;

wherein burning of said hot volatile gases in said secondary chamber provides an additional source of heat for radiation by said firebox, thereby increasing the thermal efficiency of the fuel burned therein.

4,338,914

COMBINATION AIR TUNNEL-ANDIRON DEVICE AND FIREPLACE CONSTRUCTION THEREFOR

Robert L. Braswell, P.O. Box 392, Alton, Mo. 65606

Filed Apr. 1, 1981, Ser. No. 249,989
Int. Cl.³ F24B *13/02*
U.S. Cl. 126—143 **3 Claims**

1. For use on a fireplace floor having a rearward-positioned upward draft opening, a combination air tunnel and andiron device fabricated of fire-resistant metal and comprising

a pair of spaced-apart fore-and-aft extending parallel beams, each having a substantially vertical web portion and upper and lower beam chord portions,

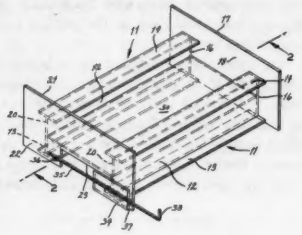
a substantially horizontal tunnel plate joining those beam web portions facing each other at a height intermediate their upper and lower chord portions,

whereby to provide an air tunnel extending from the lower beam chord portions upward to the tunnel plate, and to provide andiron portions extending upward from the tunnel plate to the upper beam chord portions,

a substantially vertical aft plate extending across the rear ends of said beams and joining same and the aft edge at tunnel plate,

whereby its lower edge and the lower edges of said lower beam chord portions lie in a plane and when rested on such fireplace floor block off the rear of said air tunnel,

said rear plate having an upward extending portion above said upper beam chord portions,



whereby to provide rear restraint for firewood resting on the said upper chord portions, and

a substantially forward vertical plate extending across the forward ends of said beams and joining same and the forward edge of said tunnel plate and having a draft outlet below said tunnel plate,

the said forward plate having an upward extending portion above said upper beam chord portion,

whereby to provide similar forward restraint for logs on said upper beam chord portions,

there being an open space between the said beams above said tunnel plate, whereby to accommodate ashes and provide draft beneath such logs and cooling of said tunnel plate,

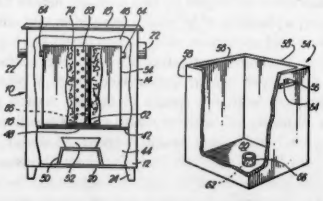
in combination with adjustable means to provide varied closure of said draft opening.

4,338,915

STOVE CONSTRUCTION

Joseph Martonfi, Sr., 500 Rang St. Francois, Blainville, Quebec, Canada

Filed Feb. 26, 1981, Ser. No. 238,586
Claims priority, application Canada, Dec. 15, 1980, 366772
Int. Cl.³ F23H *1/02*
U.S. Cl. 126—163 A **8 Claims**



1. A stove for burning combustible material comprising:

a housing;

means for extracting flue gases from said housing;

a horizontal member dividing the interior of said housing into

an upper chamber and a lower chamber, said member having a generally central aperture therethrough,

upper and lower openable door means in a side wall of said housing for permitting access to said upper and lower chambers respectively;

said lower chamber being adapted to contain a starting fire therein below said aperture;

container means in said upper chamber and having side walls and a bottom wall, said bottom wall having a generally central opening therethrough, with said opening in registry with said aperture; and

flame propagation means positionable in said container means, and extending upwardly from said bottom wall, said flame propagation means comprising a generally elongated tube positionable in registry with said opening and having a plurality of holes extending through the tube wall;

whereby, with combustible material substantially filling said container means and surrounding said flame propagation means, and with said container means enclosed in said upper chamber, flames from a small temporary starting fire in said lower chamber will be drawn upwardly through said aperture and said opening into said flame propagation means and will pass through said holes to initiate combustion of the combustible material in said container means, combustion of said material containuing generally radially outwardly of said flame propagation means.

4,338,916

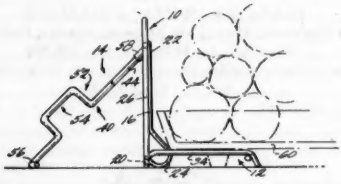
FIRE DOG

John F. Vaughn, P.O. Box 512, Saluda, S.C. 29138

Continuation-in-part of Ser. No. 105,375, Mar. 20, 1980, abandoned. This application Mar. 19, 1981, Ser. No. 245,605

Int. Cl.³ F24B *13/00*

U.S. Cl. 126—298 **9 Claims**



1. A fire dog for containing logs burning on a grate comprising:

a front member having a generally planar extent vertically disposed, said front member comprising a plurality of vertical members, upper and lower support members, said vertical members being attached between said upper and lower support members in a spaced relation, and two interconnecting members, each connected from an end of said upper support to a corresponding end of said lower support, each of said interconnecting members curving upwardly from said upper support member;

a leg assembly attached to said front member and adapted to slide under said grate, said leg assembly having a length and weight to keep said front member vertically disposed when said logs are resting against said front member; and

handle means removably connected to said front member for sliding said front member and leg assembly away from said grate while fire is burning on said grate.

4,338,917

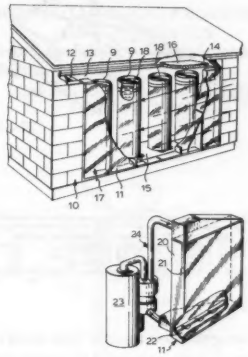
LOW TEMPERATURE SOLAR FURNACE AND METHOD

Robert R. Keller, Bedford, N.H., assignor to Keller Companies, Inc., Manchester, N.H.

Continuation of Ser. No. 49,736, Jun. 18, 1979, abandoned, which is a continuation-in-part of Ser. No. 949,267, Oct. 6, 1978, abandoned, which is a continuation of Ser. No. 579,560, May 21, 1975, abandoned. This application Aug. 24, 1981, Ser. No. 295,377

Int. Cl.³ F24J *3/02*

U.S. Cl. 126—429 **15 Claims**



1. In combination with a building, an integrated low temperature, solar space and water-heating system comprising an insulated enclosure operatively associated with the building, at least one side of said enclosure comprising a solar transmittor panel forming a part of an outer wall of the building, said enclosure extending into the building a distance substantially in excess of the thickness of said outer wall, a heat sink within said enclosure spaced inwardly from the transmittor panel for receiving and absorbing solar energy through said panel and simultaneously storing the heat of said energy therein and thereat, said heat sink comprising at least one container with heat absorbing material therein, the heat absorbing material occupying a significant volume of the enclosure, means including powered air moving means connected to said enclosure for circulating air through another part of the building and through said enclosure in heat transfer relation with said heat sink, at least one water tank in said enclosure in radiant heat-receiving relation with said heat sink, said water tank forming part of a hot water supply system for the building, both said heat sink and said water tank being positioned in the enclosure for direct exposure to solar energy received through said transmittor panel, and movable insulating means within the enclosure, the insulating means being movable between a first position exposing the heat sink and water tank to heat energy transmitted through said transmittor panel and a second position screening the heat sink and water tank and minimizing heat transfer between the enclosure and the outer environment through said transmittor panel.

4,338,918

UNITARY STRUCTURE AND METHOD FOR UTILIZING SOLAR ENERGY

William W. Milburn, Jr., Boulder, Colo., assignor to Thomas W. O'Rourke, Boulder, Colo.

Division of Ser. No. 970,287, Dec. 18, 1978, Pat. No. 4,250,871. This application Jan. 5, 1981, Ser. No. 222,447

Int. Cl.³ F24J *3/02*

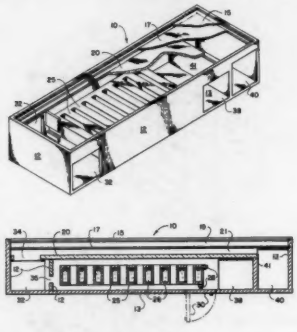
U.S. Cl. 126—430 **10 Claims**

10. A method for operating a unitary, modular enclosure for absorbing and storing solar energy for use in heating a selected volume, the enclosure including at least one layer of glazing

transparent to solar energy at an outer surface thereof, an absorber adjacent the glazing and within the enclosure, and a self contained, hollow heat reservoir including therein a flowable heat storage medium positioned within the enclosure and adjacent the absorber, the method comprising:

passing radiant solar energy when available through the glazing and absorbing the solar energy upon the absorber to produce sensible heat;

transferring the sensible heat from the absorber to a heat transfer fluid;



selectively flowing the heat transfer fluid from the absorber to at least one of the heat storage reservoirs and a heating system adapted to provide sensible heat to the selective volume; and

terminating flow of heat transfer fluid from the absorber in the absence of radiant solar energy and initiating a flow of heat transfer fluid in the heating system from the volume to be heated to the heat storage reservoir and back to the volume to be heated to withdraw sensible heat from the reservoir and provide such heat to the volume to be heated.

4,338,919

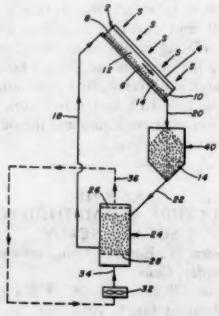
SOLAR COLLECTOR SYSTEM EMPLOYING PARTICULATE ENERGY COLLECTING MEDIA

Charles C. Hwang, Pittsburgh, Pa., assignor to University of Pittsburgh, Pittsburgh, Pa.

Filed Jul. 21, 1980, Ser. No. 170,644

Int. Cl.³ F24J 3/02

U.S. Cl. 126—435 **13 Claims**



1. A solar collector system comprising

particulate energy collecting means for receiving solar energy,

solar collector means for directly and simultaneously exposing a plurality of said particulate energy collecting means to solar energy,

said solar collector means has a first wall transparent to solar energy,

said solar collector means defines a path for passage of said particulate energy collecting means therethrough,

heat exchanger means for permitting transfer of heat from said particulate energy collecting means to another medium,

transport means for delivering said particulate energy collecting means through said solar collector means, from said solar collector means to said heat exchanger means and from said heat exchanger means to said solar collector means,

said transport means includes passageway means for defining a path of flow of said particulate energy collecting means and conveying means for moving said particulate energy collecting means through said passageway means,

said conveying means includes endless conveyor means disposed within said passageway means,

said passageway means connecting said solar collector means with said heat exchanger means for delivering said particulate energy collecting means from said solar collector means to said heat exchanger means and back to said solar collector means, whereby a plurality of said particulate energy collecting means will be heated simultaneously by direct exposure to solar radiation through said first wall as said collecting means moves along said path within said solar collector means,

said heat exchanger includes a fluidized bed,

conduit means for passing a fluid through said fluidized bed, whereby said particulate energy collecting means will pass through said fluidized bed and yield heat to said fluid,

said conduit means have first conduit means for transporting fluid at elevated temperature emerging from said fluidized bed to a heat receiving zone and second conduit means for recirculating said fluid to said fluidized bed after said fluid has yielded at least some of its heat to said heat receiving zone, and

said particulate energy collecting means has an average particulate size of about 0.1 mm. to 1.0 mm.

4,338,920

PLATE SOLAR-HEAT COLLECTOR

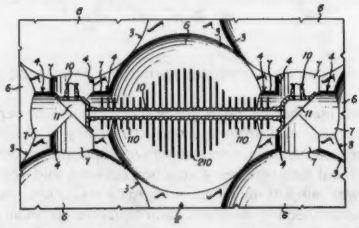
Angelo Camerano, 42/1A, Via Mignone, Savona, Italy

Filed Apr. 11, 1980, Ser. No. 139,394

Claims priority, application Italy, Apr. 24, 1979, 12560 A/79

Int. Cl.³ F24J 3/02

U.S. Cl. 126—443 **3 Claims**



1. A solar-radiation collector comprising:

(a) a plurality of elongated pipe means capable of absorbing solar radiation, for transporting a medium to be heated,

(b) said plurality of pipe means being arranged in a generally planar array,

(c) fins for absorbing solar radiation, on each of said plurality of pipe means and tranverse to each of said plurality of pipe means,

(d) an evacuated and at least partially transparent chamber surrounding said pipe means and said fin means,

(e) a transparent element having a plurality of partially-cylindrical and a plurality of partially-spherical bulges, each partially-cylindrical bulge being coaxial with a partially spherical bulge,

(f) a reflective element having a plurality of partially-cylindrical and partially-spherical bulges, each partially-cylindrical bulge being coaxial with a partially-spherical bulge,

(g) said transparent and said reflective elements being joined together to form said evacuated chamber, said evacuated chamber having co-axial cylindrical and spherical portion, and

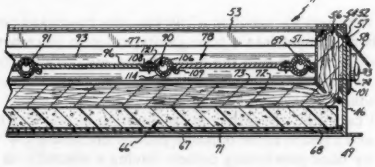
(h) the perimeters of some of said fins lying in an imaginary cylindrical surface located within said cylindrical portion, and the perimeters of other of said fins lying in an imaginary spherical surface located within said spherical portion.

4,338,921

SOLAR LIQUID HEATING SYSTEM

Willard J. Harder, and James M. Pickett, both of Minneapolis, Minn., assignors to Bethany Fellowship, Inc., Minneapolis, Minn.

Filed Jan. 30, 1980, Ser. No. 116,783
Int. Cl.³ F24J 3/02
U.S. Cl. 126—446 **3 Claims**



1. In a solar energy collector having a frame, heat insulation means mounted thereon and forming the bottom, sides and ends of a chamber, cover means on said frame over the chamber of a material permitting solar energy to pass therethrough and into the chamber, solar energy collecting means mounted on the frame and located in the chamber to absorb energy for the sun and transmit heat energy to a liquid wherein the collecting means includes a plurality of plates disposed in side-by-side relation wherein said plates are similar and include respectively complementary laterally adjacent edges, a plurality of tubes mounted in engagement with the plates at their respective edges, and tubular inlet and outlet manifolds connected to the tubes for liquid flow therethrough for solar heating,

the improvement comprising, each said plate having an extended planar central body between lateral edges thereof,

one said lateral edge defining a first arcuate section disposed entirely on one side of said plate extending from a juncture with said central body and terminating in a planar flange which is substantially planar with said central body, and a hook extending from the other side of said plate and terminating in a laterally directed lip extending obliquely toward the concave face of said arcuate section,

the other said lateral edge of said central body defining a substantially planar offset step on the opposite side of said plate from said first arcuate section, said planar step merging into a second arcuate section disposed entirely on said other side of the plate and terminating in a hook substantially coplanar with said offset portion, said hook havng a lip extending obliquely outwardly from said plate,

said plate including said body portion, said arcuate sections, and said step comprising thin sheet material of substantially uniform thickness,

each said tube is received in one of said arcuate sections wherein said oblique hooks permit swinging movement of a complementary arcuate section of another said plate into overlying relation with said tube to substantially entirely enclose the same within said thin walls of the plates, thereby to maximize heat transfer between said thin plates and said tubes, said arcuate section of adjacent plates surrounding said tube and so disposed so as to locate the tube in an outwardly extending position with respect to each side of said plate thereby to further maximize heat transfer,

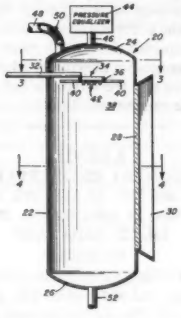
and means securing said terminal flange on one plate to said step section on said other plate.

4,338,922

SOLAR POWERED CHEMICAL PROCESSING METHOD AND APPARATUS

Walter T. Moore, Camarillo, Calif., assignor to Veda, Incorporated, Arlington, Va.

Filed Jul. 15, 1977, Ser. No. 816,020
Int. Cl.³ B23K 3/02
U.S. Cl. 126—452 **17 Claims**



1. Apparatus for providing direct thermolytic and photolytic processing of a substance by interaction by absorption between a free-flowing, rainfall dispersion of the substance and electromagnetic radiant solar energy in a concentration sufficient to carry out said processing comprising:

a vessel having a chamber generally closed to the ambient atmosphere, said chamber having opaque walls;

means for producing a free-flowing, rainfall dispersion of the substance to be thermolytically and photolytically processed within the chamber; and

means for subjecting the dispersion produced to thermolytic and photolytic processing by interaction by absorption with said direct incident concentrated electromagnetic solar energy to produce a resultant material from the substance, said means including an entry window.

4,338,923

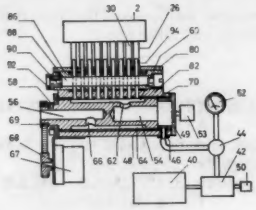
INFLATABLE-CELL TYPE BODY TREATING APPARATUS

Vadim Gelfer; Yaakov Kaganovsky, both of Ramat Gan; Shimon Muchnik, Tel Aviv, and Shimshon Shmuter, Ramat Gan, all of Israel, assignors to Mego Afek Industrial Measuring Instruments, Afek, Israel

Continuation of Ser. No. 945,796, Sep. 26, 1978, abandoned. This application Dec. 16, 1980, Ser. No. 217,041
Claims priority, application Israel, Oct. 13, 1977, 53123
Int. Cl.³ A61M 1/00
U.S. Cl. 128—24 R **8 Claims**

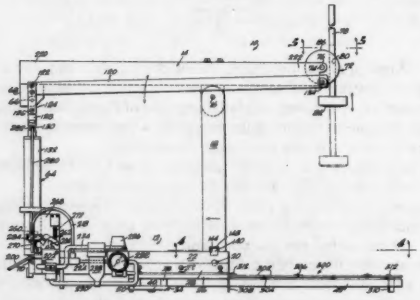
1. Apparatus for the treatment of body parts, comprising an inflatable sleeve of flexible material divided into a plurality of internal inflatable cells extending along one dimension of the sleeve, each of said cells including a port for inletting and outletting fluid with respect thereto, thereby to individually inflate or deflate the cells; said sleeve being applicable to the

body part to be treated to enclose same with the inflatable cells extending annularly around the sleeve; inflating means for applying a pressurized fluid to said ports according to a predetermined sequence for inflating and deflating said internal cells; said inflating means comprising a source of pressurized fluid, a rotary distributor including a pressurized chamber connected



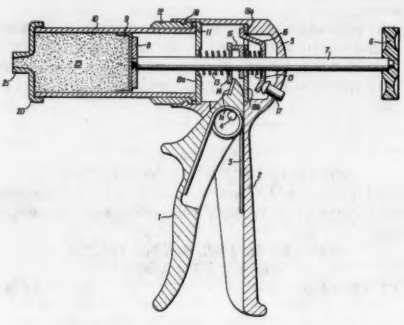
to the pressurized fluid source, a drain chamber vented to the atmosphere, and passageways coupling the pressurized and drain chambers to the ports of the inflatable cells according to a predetermined sequence during the rotation of the distributor; and an interchangeable apertured selector plate between the rotary distributor and the inflatable cell ports to select the ports to receive the pressurized fluid.

4,338,924
CARDIOPULMONARY RESUSCITATION DEVICE
Charles S. Bloom, 1400 NW. 10 Ave., 19E, Miami, Fla. 33136
Filed Nov. 20, 1980, Ser. No. 208,544
Int. Cl.[3] A61H *31/00*
U.S. Cl. 128—28 **22 Claims**



1. A device for administering cardiopulmonary resuscitation to a heart attack victim comprising, a main horizontally disposed base, a normally upstanding post from said base, pivotally attached at an upper end intermediate the length of a generally horizontally extending upper beam member, a spring-loaded pneumatic cylinder and piston assembly, pivotally connected between respective rear end portions of said base and beam, a chest abutment member adjustably suspended in a generally vertical attitude relative to a front end of said beam, and valve means connected in a pneumatic system to receive a flow of pressurized oxygen from a suitable source such as a commercially available pressurized oxygen tank, and means to continuously sequentially operate said valve means to, first, direct a flow of pressurized oxygen through said system to said cylinder to actuate said piston in a manner so as to rock said beam about said intermediate upper end pivot to cause said chest abutment to descend into contact with and to exert a pressure on the heart area of a heart attack victim positioned therebeneath, and, second, to exhaust said oxygen in said cylinder through said system under the influence of said spring-loading, and to direct said exhausted oxygen through said valve means and a conduit connecting to a face mask for positioning over the nose and mouth area of the victim.

4,338,925
PRESSURE INJECTION OF BONE CEMENT APPARATUS AND METHOD
Jo Miller, 641 Argyle Ave., Westmount, Quebec, Canada
Filed Dec. 20, 1979, Ser. No. 105,573
Int. Cl.[3] A61F *5/04;* **A61M** *3/00, 35/00*
U.S. Cl. 128—92 E **7 Claims**



1. A system for injecting a low viscosity pre-mixed penetrating bone cement into a bone cavity, prior to placement of a prosthetic device into the bone cavity, under sufficient pressure to cause the cement to penetrate between the trabeculae of the bone, said system comprising;

(a) cartridge means having an opening at one end thereof and a piston at the opposite end thereof, and a low viscosity bone penetrating cement having a viscosity, at 68° to 70° F., of less than 2,000 poises, up to about the sixth minute after the time of initial mixing of the cement, said opening functioning as both an inlet for loading said cement into said cartridge means and as an outlet from which said cement can be forced out of said cartridge means;

(b) extruding means for forcing a low volume of about 2 to 3 cubic centimeters of the penetrating bone cement in said cartridge means to move towards said outlet opening, said extruding means comprising

a housing for engaging the end of the cartridge having the piston;

pressure means for forcing the piston into the cartridge means and comprising a rod supported in said housing in axial alignment with respect to said cartridge means, one end of said rod engaging the piston and a means for slideably engaging said rod; and

manual activating means for actuating the pressure means and comprising a lever pivotally connected to the housing by a pivot pin, said lever having one end manually movable with respect to the housing and having the opposed end thereof engaging the means for slideably engaging the rod;

wherein said opposed end of the lever which engages the means for slideably engaging the rod, said pivot pin, and said lever are configured such that a single manual actuation of said lever causes said slideable engaging means to move said rod which moves said piston into the cartridge means a distance sufficient to forcibly eject said low volume of low viscosity penetrating bone cement through said outlet opening under substantial pressure sufficient to cause said cement to penetrate between the trabeculae of the bone; and

(c) removable nozzle and pressure sealing means at the outlet opening of said cartridge means for applying the low volume of low viscosity penetrating bone cement forced

from the cartridge means by the extruding means to the bone cavity and for providing a pressure seal between said bone cavity and said outlet opening, whereby said low volume of low viscosity penetrating bone cement will be injected into the bone cavity under said substantial pressure and will penetrate between the trabeculae of the bone to thereby provide a bone/cement interface to securely hold said prosthetic device in place,

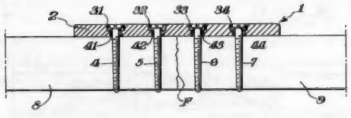
wherein said removable nozzle and pressure sealing means comprises a removable closure cap fitting over the outlet opening of said cartridge means and having an outlet orifice and at least one nozzle removably connectable to said outlet orifice, at least one of said nozzles having an outlet portion shaped to close against an entrance to a bone cavity to thereby provide said pressure seal between said bone cavity and said outlet opening.

4,338,926

BONE FRACTURE PROSTHESIS WITH CONTROLLED STIFFNESS

Frederick J. Kummer, Hackensack, N.J., and Richard D. Coutts, San Diego, Calif., assignors to Howmedica, Inc., New York, N.Y.

Filed Nov. 21, 1980, Ser. No. 208,906
Int. Cl.³ A61F *5/04*; A61B *17/18*
U.S. Cl. 128—92 BC **9 Claims**



4. A bone prosthesis for use in healing a bone fracture comprising a strong, rigid, biologically non-absorbable structural member, distinct means to secure said structural member to said bone, and a biologically absorbable element adapted to be held under compression between said securing means and said structural member when said prosthesis is secured to said bone, so that stress is transmitted from said bone through said element to said structural member,

whereby the stress transmitted to said prosthesis gradually decreases with time during the healing of said bone as said element is absorbed.

4,338,927

DEVICE FOR RESTORING THE FUNCTION OF THE LOWER EXTREMITIES

Mstislav V. Volkov, Stroitelnaya ulitsa, 6, korpus 1, kv. 63; Oganes V. Oganesian, ulitsa Pervomaiskaya 74, kv. 87, and Leonid A. Povarov, Tsvetnoi bulvar, 25, kv. 34, all of Moscow, U.S.S.R.

Filed Mar. 16, 1981, Ser. No. 243,804
Int. Cl.³ A61F *5/04*
U.S. Cl. 128—92 A **1 Claim**

1. A device for restoring the function of the lower extremities comprising:

a mechanism for restoring the function of the ankle joint comprising:

two pairs of half-rings, one of said pairs including an axial half-ring, which is fastened to the axle of rotation of the ankle joint, and a locking half-ring, which is fastened to the metatarsal bones of the foot, said half-rings being rigidly secured to each other at their ends; the other of said pairs including a rotatable half-ring, which is fastened to the distal portion of the shin bone, and a locking half-ring, which is fastened to the middle portion of the shin bone, said half-rings being rigidly secured to each other;

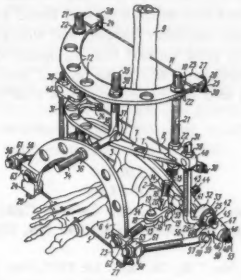
articulated distraction members mounted on the ends of said axial and rotatable half-rings and adapted to join together said pairs of half-rings;

a mechanism for correcting deformities of the foot, comprising:

brackets rigidly secured to the ends of said axial half-ring;

spindles fastened to said brackets;

L-shaped connecting rods rotatably mounted on said spindles;



ties to couple respective ones of the arms of said L-shaped connecting rods with the ends of the locking half-ring, which is fastened to the metatarsal bones of the foot;

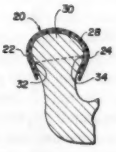
a spoke that is driven through the heel bone and is fastened to corresponding ones of the arms of said L-shaped connecting rods.

4,338,928

LIP SHIELD AND TREATMENT DEVICE

Leonard G. Martin, 301 Golden Isle Dr., Apt. 105, Hallandale, Fla. 33009, and Herbert S. Leb, 671 NE. 195 St., Apt. 121, North Miami Beach, Fla. 33179

Filed Sep. 5, 1980, Ser. No. 185,103
Int. Cl.³ A61F *5/56*
U.S. Cl. 128—136 **10 Claims**



1. An improved lip shield adapted for comfortable and effective mounting on a single human lip, said human lip characterized as having an exterior vermilion surface ending at the vermilion border, an intra-oral surface ending at the vermilion-mucosal border, and a generally U-shaped horseshoe configured cross-section with said cross-section having a maximum width along an imaginary line connecting the point on said cross-section representing said vermilion border to the point on said cross-section representing said vermilion-mucosal border,

said improved lip shield comprising a one-piece member having a first leg means for covering said exterior vermilion surface of said lip, a second leg means for covering said intra-oral surface of said lip, and further having a generally U-shaped horseshoe configured cross-section corresponding to said lip cross-section with the maximum distance between said first and second leg means being measured along an imaginary line connecting the point on said shield cross-section that covers said lip vermilion border to the point on said shield cross-section that covers

said lip vermilion-mucosal border when said shield is mounted on said lip,

said shield cross-section having first, second, and third portions, said first portion located on one side of said imaginary line representing the maximum distance between said first and second leg means and said second and third portions located on the other side of said imaginary maximum distance line and wherein the distance between any two points on respective first and second leg means located on said first portion of said shield cross-section is less than said maximum distance, and wherein the distance between any point on said first leg means located on said second portion and any point on said second leg means located on said third portion is less than said maximum distance.

4,338,929

EAR-PLUG

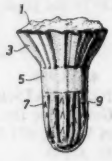
Tord R. Lundin, Billesholm, and Kalman Csiki, Landskrona, both of Sweden, assignors to Gullfiber AB, Billesholm, Sweden

Division of Ser. No. 778,134, Mar. 16, 1977, Pat. No. 4,215,683. This application Jul. 29, 1980, Ser. No. 173,428

The portion of the term of this patent subsequent to Aug. 5, 1997, has been disclaimed.

Int. Cl.³ A61F *11/02*

U.S. Cl. 128—152 **5 Claims**



1. An ear protecting plug comprising an elastic, plug-like body of fibrous material, at least a part of said body being adapted for insertion into an auditory canal of an ear, and a casing surrounding at least said part of the body, said casing being adapted for insertion in the auditory canal, having a surface with a friction coefficient substantially lower than that of the fibrous material and being a thin plastic film, the part of the plug-like body being adapted for insertion into an auditory canal of an ear being substantially cylindrical and the plug-like body further including an expanded end part adapted to at least partially fill out the concha of the ear outside the auditory canal, the plastic film being wrapped at least around the part of the plug-like body adapted to be inserted into an auditory canal thereby producing lengthwise folds in the casing, a circumferential heat weld in the plastic film being positioned at the junction of the substantially cylindrical part and the expanded end part to fix the plastic film and weld it to the fibrous material.

4,338,930

AIRWAY INTUBATOR

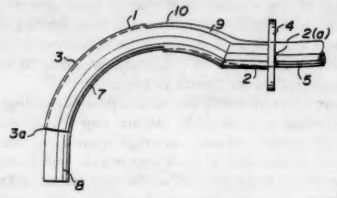
R. Tudor Williams, 3423 Utah Crescent, Calgary, Alta. T2N 4A9, Canada

Filed Sep. 8, 1980, Ser. No. 184,612

Int. Cl.³ A61M *25/02*

U.S. Cl. 128—200.26 **4 Claims**

1. An improved oro-pharyngeal airway adapted to function as a guide and passageway for an endotracheal tube for intubation of a human larynx, said airway having distal and proximal halves and ends of generally ellipsoidal, exterior cross-sectional shape, in which the airway has an air passage therethrough of a size sufficient to accommodate a complementary endotracheal tube and in which the distal half and end is open



along its lingual surface so as to permit the passage therethrough of the aforesaid complementary endotracheal tube.

4,338,931

DEVICE FOR THE QUICK INHALATION OF DRUGS IN POWDER FORM BY HUMANS SUFFERING FROM ASTHMA

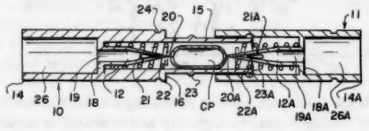
Claudio Cavazza, 35, Via Marocco, 00144 Rome, Italy

Filed Apr. 28, 1980, Ser. No. 144,016

Claims priority, application Italy, Apr. 27, 1979, 48883 A/79

Int. Cl.³ A61M *15/06*

U.S. Cl. 128—203.15 **4 Claims**

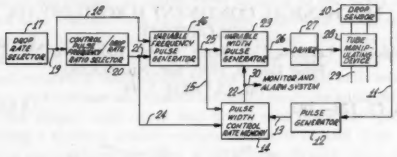


1. A device for the quick inhalation of drugs in powder form by persons suffering from asthma, said drugs being contained in a capsule made of a fairly rigid, pierceable material, comprising: a first and a second hollow cylindrical body, each of said first and second hollow cylindrical bodies having a bore open at both ends, and a hollow piercing element mounted in said bore integral with said body, said hollow piercing element comprising an open-ended small cylinder and a tip mounted at one end of said small cylinder, said tip having apertures extended therethrough for the passage of air, said first hollow cylindrical body including a cylindrical sleeve for receiving the capsule mounted at one end of said bore adjacent said second hollow cylindrical body and telescopically received in said bore of said second hollow cylindrical body, the capsule being mounted in said cylindrical sleeve intermediate said tip of each piercing element, said first and said second hollow cylinder being telescopically moveable toward each other to pass at least one of the respective piercing element relative to the other piercing element between a first position in which the capsule is still in its integral condition and a second position in which both of said piercing elements are passed into the capsule whereby the apertures are inside the capsule, mutually cooperating abutting means for stopping the insertion movement of one of said first and second hollow cylindrical members into the other, a helical spring means connected to each hollow cylindrical body and surrounding each piercing element for resiliently bearing against the capsule and urging said body away from the capsule in said second position, and cooperating means for holding said first and said second hollow cylindrical bodies in said second position counteracting said springs.

4,338,932
METHOD AND APPARATUS FOR FLUID FLOW CONTROL

Heinz W. Georgi; Wallace L. Knute, both of Del Mar, and Richard L. Foreman, Lemon Grove, all of Calif., assignors to IVAC Corporation, San Diego, Calif.

Filed Nov. 7, 1980, Ser. No. 204,768
Int. Cl.³ A61M 5/00
U.S. Cl. 128—214 E **30 Claims**



1. In the parenteral administration of medical fluids by an intravenous set including drop forming means and fluid conduit means coupled to said drop forming means, a method of controlling the rate of drop flow through said fluid conduit means, comprising the steps of:

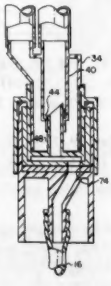
clamping said fluid conduit to a substantially shut-off state;

repetitively opening and closing said fluid conduit to fluid flow, the frequency of opening said fluid conduit being at a higher frequency than the desired drop flow rate through said fluid conduit, the ratio of said frequency of opening and closing to said desired drop flow rate being higher for relatively low drop flow rates than for relatively high drop flow rates, whereby a plurality of cycles of opening and closing said fluid conduit are required to produce each individual drop of flow.

4,338,933
COMBINATION QUICK DISCONNECT COUPLING AND LIQUID CUTOFF VALVE

Michael A. Bayard, Chicago, and James A. Turnbull, Grayslake, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 22, 1980, Ser. No. 219,017
Int. Cl.³ A61M 5/14
U.S. Cl. 128—214 R **23 Claims**



1. A combination quick disconnect coupling and liquid cutoff valve comprising:

a first tubular member connected to at least one length of flexible tubing and having a fluid passageway therethrough;

a second tubular member connected to a plurality of lengths of flexible tubing and having a cylindrical sheath telescopically circumscribing a portion thereof and extending therefrom constructed and arranged for telescopic connection with respect to said first tubular member; said sheath being movably disposed with respect to said second tubular member;

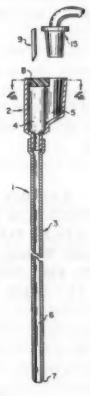
a third tubular member concentrically positioned within said second tubular member and having a penetrable resilient diaphragm member at a first end and a fluid connection to one of said lengths of said flexible tubing at a second end; and

piercing pin means inwardly disposed within and attached to said movable cylindrical sheath and adapted for penetration of said penetrable diaphragm member, said piercing pin means being constructed and arranged for the passage of a first liquid therethrough when said piercing pin means is spaced from said diaphragm member and the passage of a second liquid therethrough when said piercing pin means has been inserted through said penetrable resilient diaphragm member, thereby effecting selective flow of said first or said second liquid as required.

4,338,934
INTRAVASCULAR CATHETER APPARATUS

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Filed Feb. 19, 1980, Ser. No. 122,362
Int. Cl.³ A61M 5/14; A61J 1/06
U.S. Cl. 128—214.4 **6 Claims**

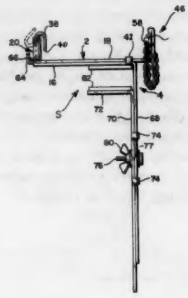


1. A catheter comprising:

a hub;

means forming a first passageway in said hub; a canula extending from said hub and communicating with said first passageway; a puncturing means for inserting said canula in a body; a sealing means in the first passageway for removably receiving said puncturing means, said sealing means including a solid member of resilient material and being of a size to permit the puncturing means to pierce and to extend through the solid member; and means forming a second passageway in said hub adjacent to and communicating with said first passageway with said solid member partially extending into the second passageway and being located in a position to be contacted and compressed by a connector member inserted in said second passageway for compressing said sealing means to close a hole formed therethrough by said puncturing means after the withdrawal of said puncturing means from said solid member.

4,338,935
SYRINGE SUPPORT
Elmer C. Wilson, 1951 Guy Way, Baltimore, Md. 21222
Filed Dec. 31, 1980, Ser. No. 221,898
Int. Cl.³ A61M *5/00*
U.S. Cl. 128—218 R **12 Claims**

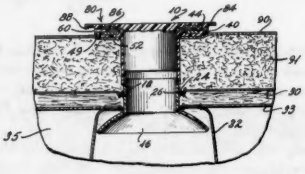


1. In a syringe support for clamping to a table top or the like a syringe having a plunger, a barrel slideable on said plunger, and said plunger having a plunger head, that invention which includes:
(a) a horizontal body for supporting such syringe including a longitudinal axis
(b) a first upright bracket member on one end of said body
(c) means for locking said plunger head in said first bracket against longitudinal axial movement relative to said body
(d) a second upright bracket member on the other end of said body
(e) mounting means on said second bracket member for supporting said barrel for longitudinal slideable axial movement relative to said body, and
(f) latch means on said first bracket for preventing upward displacement of said syringe when positioned in said first and second brackets.

4,338,936
DEVICE AND METHOD FOR DELIVERING SOLID MEDICATION TO AN EYE
Byron Nelson, 3521 Perada, Walnut Creek, Calif. 94598
Filed Oct. 27, 1980, Ser. No. 201,180
Int. Cl.³ A61M *11/00*
U.S. Cl. 128—266 **5 Claims**

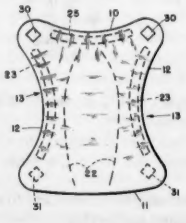
1. A device for delivering finely divided solid medication to an eye comprising:
a. a flexible container having an air chamber therewithin and an opening, communicating with said air chamber for passage of air to and from said chamber;
b. means adapted for directing air from said air chamber to the eye comprising a hollow member having a first opening communicating the interior thereof with said air chamber and an opening second opening adapted for placement adjacent the eye;
c. means intended for holding a predetermined dose of the finely divided solid medication in the path of the air leaving said chamber through said directing means before arrival of the air at the eye;
d. filter means intended for preventing the finely divided solid medication from entering the air chamber of the flexible container, said filter means defining an extremity of said air chamber, said filter means being located in said hollow member, said hollow member including an enlargement for holding said filter means.

4,338,937
MECHANICAL CONTINENT ILEOSTOMY OR COLOSTOMY
Sheldon H. Lerman, 2202 Ken Oak Rd., Baltimore, Md. 21209
Filed Dec. 5, 1980, Ser. No. 213,337
Int. Cl.³ A61F *5/44*
U.S. Cl. 128—283 **3 Claims**



1. A mechanical continent ostomy device comprising:
a body portion in the shape of a cylindrical stem surmounting a flexible flange with screw threads present on the stem at the end thereof opposing said flange;
an insert portion in the shape of a cylindrical stem with a rim at one end thereof, the rim having at least one permanent magnet therein, the insert stem having screw threads present thereon at the end thereof opposing said rim;
the screw threads on said body and the screw threads on said insert being matched whereby a male-female coupling of insert and body may be made;
a stopper member in the shape of a rimmed plug, the plug portion being sized to fit into said insert, and the rim portion being sized to fit superposed on the insert rim, said stopper having at least one permanent magnet being present inside the rim thereof, whereby said stopper and said insert may be magnetically coupled rim to rim; and
a disposable washer member, adapted to fit between the rims.

4,338,938
WASHABLE DIAPER
Susan A. Seavitt, 975 Plymouth, SE., Grand Rapids, Mich. 49506
Filed May 19, 1980, Ser. No. 151,353
Int. Cl.³ A61F *13/10*
U.S. Cl. 128—284 **1 Claim**



1. A washable, reuseable diaper, said diaper having a body; said body having a pair of ends and a pair of sides, one of said

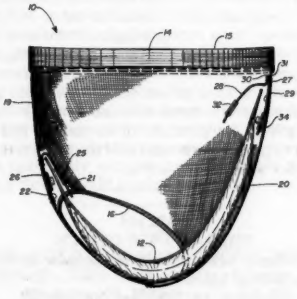
ends having a small outward curvature to give it convexity, said sides being shaped in the form of a segment of a curve extending substantially the full length of each side and convergent intermediate said ends whereby the least width of said diaper is substantially midway between the ends thereof; said body having an interior laminae, the exterior lamina having a latex inner face and a fabric exterior face; said body having an inner lamina of a multi-layered woven cotton, moisture absorbing fabric providing the only material forming the inside surface of the diaper; an elastic band secured to said body along each side intermediate said laminae, said band being spaced inwardly from the side edge of the diaper; the ends of said bands being spaced from the ends of said body; a third elastic band secured to said body along the other of said ends intermediate said laminae and spaced inwardly from the adjacent edge of the diaper; said other end when said diaper is released, having a shallow concave shape; the ends of said third band being spaced from the sides of said body; all said elastic bands being embedded within the body of said diaper whereby no portion thereof will contact an infant wearing the diaper, said elastic bands at said sides providing means for adjusting the diaper to fit closely about an infant's legs and the elastic band at the one end providing automatic means of adjusting to the waist of an infant the length of the combined ends of the diaper; detachable fastening means secured to said body at each of its four end corners and at each corner being spaced from the adjacent end of said elastic bands.

4,338,939

INCONTINENCE PANTS

Helenne Daville, 1237 Admiral Dr., Apopka, Fla. 32703

Filed Feb. 27, 1980, Ser. No. 125,283
Int. Cl.[3] A41B *13/02*
U.S. Cl. 128—286 **9 Claims**



1. Incontinence pants adapted to be worn with a human waste absorbing disposable diaper by a person about the waist and between the legs by being pulled on over the legs comprising:

(a) a unitary supporting garment of fabric content having an upper portion and a lower portion, the upper portion having a first expandable opening to surround the waist, the lower portion having a second and a third opening each adapted to receive a leg therethrough;

(b) an intermediate portion connecting the upper portion and the lower portion and having a front side and an opposing rear side both interconnected to form with the upper portion a continuous surface, the continuous surface having a midline that passes centrally through the front side and the opposing rear side;

(c) first diaper retaining means fastened to the front side having an inner flap and an outer flap and positioned at least partially along the midline;

(d) at least a second diaper retaining means fastened to the continuous surface on the opposing rear side having an inner flap and an outer flap and positioned at least partially along the midline; and

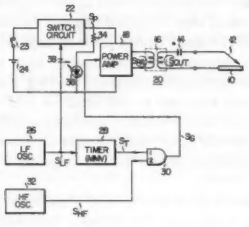
(e) coupling means fastened to the inner and outer flaps of the first and second diaper retaining means so as to permit each diaper retaining means to receive between the inner and outer flaps the disposable diaper and to detachably hold the disposable diaper therebetween such that a fecal matter trap is formed between the legs of the wearer and a urine pocket is formed adjacent the front portion of the supporting garment when the disposable diaper is positioned between the wearer's legs and up and about at least a portion of the front and the back of the waist effective to retain human waste when the supporting garment is pulled up and about the waist.

4,338,940

APPARATUS FOR SUPPLYING POWER TO AN ELECTROSURGICAL DEVICE

Yuji Ikuno, Ome, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 13, 1980, Ser. No. 177,922
Claims priority, application Japan, Sep. 3, 1979, 54-112637
Int. Cl.[3] A61B *17/39*
U.S. Cl. 128—303.14 **4 Claims**



1. Apparatus for supplying surgical current to an electrosurgical device, comprising:

power output means for providing a surgical current to an electrosurgical device;

a source of power;

switch means coupled to said power output means and to said power source for supplying said power output means with a power signal to provide said surgical current;

first signal generation means coupled to said switch means for supplying said switch means with a switch signal to turn on and off said switch means with given timing;

second signal generation means coupled to said power output means for supplying said power output means with a surgical signal having a period corresponding to said surgical current;

timer means triggered by said switch signal and producing a timer signal for a given period of time after being triggered, said given period of time having a predetermined value which is such that energy delivered from the electrosurgical device may not incise the tissue of a living body; and

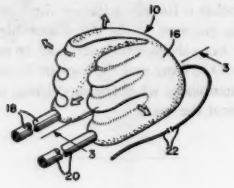
gate means coupled to said second signal generation means and to said timer means for allowing said surgical current to be delivered from said power output means to said electrosurgical device only for said given period of time while said timer signal is being produced;

whereby said surgical current is supplied from said power output means to said electrosurgical device in accordance with the logical AND of said switch signal, said timer signal and said surgical signal.

4,338,941
APPARATUS FOR ARRESTING POSTERIOR NOSEBLEEDS

Hugh W. Payton, 36 S. Main St., Jeffersonville, Ohio 43404

Filed Sep. 10, 1980, Ser. No. 185,707
Int. Cl.[3] A61B 17/12
U.S. Cl. 128—325 6 Claims



1. A posterior nasal pack device adapted to be inserted through the mouth and oropharynx of a patient into the nasopharynx partially surrounding the posterior portion of the septum and thereafter expanded to apply hemostatic pressure to arrest posterior nasal hemorrhaging comprising;

an expandable, foamed elastomer pack molded to conform generally to the surfaces of the walls of both sides of the posterior portion of the nasal cavity, the anterior wall of said pack having a U-shaped channel adapted to partially surround the posterior end of the septum with the respective ends of said U-shaped channel extending into opposite sides of the nasal cavity prior to expansion, the interior of said elastomer pack containing two adjoining hollow, fluid impermeable chambers sharing a common wall,

tube means attached to the anterior wall of said elastomer pack said tube means comprising a first and second hollow, flexible tube, each of said first and second tubes in fluid communication with a respective hollow chamber, and

string means attached to said elastomer pack of sufficient length to traverse the distance between the nasopharynx and the mouth to aid in removal of the nasal pack.

4,338,942
DILATATION CATHERTER APPARATUS

Thomas J. Fogarty, 770 Welch Rd., Palo Alto, Calif. 94304

Filed Oct. 20, 1980, Ser. No. 198,342
Int. Cl.[3] A61M 29/02
U.S. Cl. 128—344 6 Claims

1. A dilatation catheter comprising a pair of concentrically disposed spaced apart inner and outer flexible tube members, a first annular inner inflatable bag attached to the distal end of said inner tube member and attached at its other end to a first tip member, a second annular outer inflatable bag in superposed relation to said first bag attached to the distal end of said outer tube member and attached at its other end to a second tip member, a wire extending through said inner tube member and said first bag and secured to said first tip member operable upon axial rotation thereof to axially twist said first bag and thereby decrease its diameter in its non-inflated condition, first means to inflate and deflate said first bag through said inner tube member, and second means operable independently of said first means to inflate and deflate said second bag through said outer tube member.

4,338,943
INSTRUMENT FOR INDUCTION OF LABOR

Tadao Okamoto; Eisuke Obata, both of Tokyo, and Yutaka Enomoto, Kawaguchi, all of Japan, assignors to Fuji Latex Co., Ltd., Tokyo, Japan

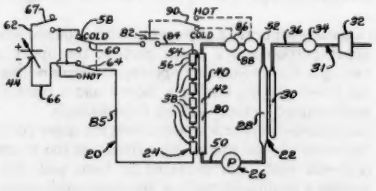
Division of Ser. No. 38,908, May 14, 1979, Pat. No. 4,270,541.
This application Feb. 19, 1981, Ser. No. 236,068
Int. Cl.[3] A61M 29/02
U.S. Cl. 128—344 6 Claims

1. An obstetrical instrument for induction of labor comprising an elongated, tubular member formed of flexible, durable, and soft material and having a leading end and a trailing end, said tubular member being closed at the extremity of its leading end and being opened at its trailing end, a relatively thin walled balloon fabricated of natural or synthetic rubber being disposed enclosingly about the leading end portion of said tubular member, said balloon being sealed in its rearward or trailing end portion about the outer face of said tubular member for development of a liquid leakproof joint therebetween, said joint being remote from the trailing end of said tubular member so that the latter between said joint and the trailing end thereof is fully exposed, said tubular member being provided with at least one opening adjacent its leading end for establishing communication between the interior of said tubular member and the interior of said inflatable balloon for permitting ingress into said balloon, and egress therefrom, of a compatible fluid for inflation of said balloon, said balloon being fabricated of fluid impervious material so that inadvertent loss of said fluid therefrom is inhibited, said tubular member and associated inflatable balloon being coordinatingly dimensioned for disposition between the uterine wall and the amniotic membrane whereby upon inflation of said balloon the uterine wall is stimulated with increase of internal pressure for promoting removal of the amniotic membrane, said tubular member being of such length in the direction of its trailing end from the balloon seal to permit introduction of the balloon through the cervical orifice and into the uterus.

4,338,944
THERAPEUTIC DEVICE

Edward J. Arkans, Schaumburg, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Jun. 16, 1980, Ser. No. 159,708
Int. Cl.[3] A61F 7/00
U.S. Cl. 128—400 14 Claims



1. A therapeutic device, comprising:

a sleeve for covering a portion of a patient's body and having a pair of opposed flexible liquid impervious walls defining a space to receive liquid, said sleeve having a sheet of substantially nonabsorbent open cell foam in the space between said walls;

means for circulating a liquid through said space of the sleeve; and

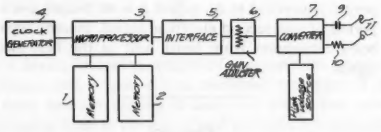
means for selectively heating and cooling the circulated liquid at a location remote from the sleeve comprising a container having opposed metallic walls defining a chamber, a plurality of thermoelectric devices arranged on the outer surfaces of both walls, each thermoelectric device having one side in contact with a chamber wall, heat sink means on each side of the container, each thermoelectric device having a side opposite said one side in contact with said heat sink, a D.C. power supply, and control means for selectively directing current through said thermoelectric devices in one direction, whereby liquid in said chamber is caused to be heated, and in a direction opposite said one direction, whereby liquid in said chamber is caused to be cooled.

4,338,945

METHOD AND RANDOMIZED ELECTRICAL STIMULATION SYSTEM FOR PAIN RELIEF

Yukio Kosugi; Jun Ikebe; Kintomo Takakura, and Yoriaki Kumagai, all of Tokyo, Japan, assignors to Clinical Engineering Laboratory Limited, Tokyo, Japan

Filed Mar. 2, 1979, Ser. No. 17,013
Claims priority, application Japan, Mar. 3, 1978, 53-24346
Int. Cl.³ A61N *1/36*
U.S. Cl. 128—421 **7 Claims**



1. An electrical pulse generation system to be used for the stimulation of dorsal column and peripheral nerves, respectively, for pain relief comprising

a pulse generator,

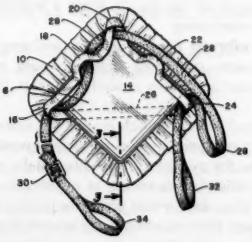
means having output electrodes constituting means adapted to be applied to central and peripheral nerve areas of a patient for automatically continuously randomizing parameters of output pulses of said pulse generator to generate a series of pulses having a specified power spectrum so as to ceaselessly provide fresh sensations to a nervous system through said electrodes.

4,338,946

VERSATILE POST MASTECTOMY DEVICE

Alice S. Donnelly, 24231 W. Trevino Dr., Valencia, Calif. 91355

Filed Dec. 29, 1980, Ser. No. 221,342
Int. Cl.³ A41C *3/10, 3/00*
U.S. Cl. 128—481 **8 Claims**



1. A post surgical device for covering the surgical situs on a human body comprising the combination of:

a cover member of selected configuration and ornamentation and being of a size sufficient to cover said surgical situs;

a plurality of spaced retaining means on the surface of said cover member adapted to overlie said surgical situs for cooperative association with a securement member to secure same on said human body; and

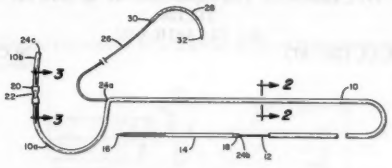
a securement member releasably received in said spaced retaining means and being of sufficient size to encircle, in adjustable fashion and supportive relationship said cover member on said human body.

4,338,947

POSITIVE FIXATION HEART WIRE

Terrell M. Williams, Coon Rapids, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Nov. 3, 1980, Ser. No. 202,978
Int. Cl.³ A61B *5/04*; A61N *1/04*
U.S. Cl. 128—642 **8 Claims**



1. A heart wire for maintaining electrical contact between an electrical device and body tissue comprising:

an elongated conductor having a distal end and proximal end;

an insulative sheath having a distal end and a proximal end and encasing said conductor;

an electrode fixedly attached to said conductor intermediate the distal end and the proximal end of said conductor and which is exposed to the exterior of said insulative sheath;

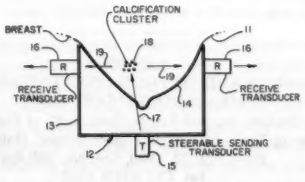
a length of surgical thread having a distal end and a proximal end which is fixedly attached to said sheath proximal to said electrode.

4,338,948

METHOD AND APPARATUS FOR DETECTING AND/OR IMAGING CLUSTERS OF SMALL SCATTERING CENTERS IN THE BODY

Victor Perez-Mendez, Berkeley, and Frank G. Sommer, Palo Alto, both of Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Mar. 27, 1980, Ser. No. 134,624
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **10 Claims**



1. An apparatus for detecting clusters of scattering centers in a volume of a body, comprising: means for directing ultrasonic energy towards a given cluster of scattering centers in periodic bursts of ultrasonic energy at a predetermined frequency; means for receiving some of said directed ultrasonic energy at a plurality of different points circumferentially spaced around said body after said energy has come in contact with said

cluster of scattering centers, said receiving means distinguishing between received ultrasonic energy having substantially the same, common amplitude at the various receiving points from received ultrasonic energy having differing amplitudes at the various receiving points, whereby to distinguish scattered ultrasonic energy having substantially the same amplitude at all of the receiving points from noise or reflected ultrasonic energy; and means responding only to the scattered ultrasonic energy received and distinguished by said receiving means for producing a corresponding output signal.

4,338,949

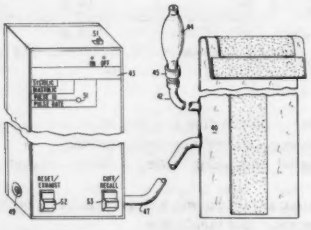
METHOD FOR PERFORMING NON-INVASIVE BLOOD PRESSURE AND PULSE RATE MEASUREMENTS

Michael E. Croslin, 37 Bow St., Forest Hills Gardens, N.Y. 11375

Division of Ser. No. 64,194, Aug. 6, 1979, Pat. No. 4,271,844, which is a continuation-in-part of Ser. No. 499, Jan. 2, 1979, abandoned, and a continuation-in-part of Ser. No. 774,970, Mar. 7, 1977, abandoned. This application Dec. 2, 1980, Ser. No. 212,120

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—677 **20 Claims**



13. A method for determining when a sufficiently high occluding pressure exists in the cuff of a blood pressure measuring instrument; said instrument including means for pumping up the cuff pressure, means for allowing air in said cuff to bleed out, and means for periodically sampling the instantaneous cuff pressure; comprising the steps of:

(a) maintaining a relative peak pressure value and continuously up-dating it in accordance with the value of a newly taken sample,

(b) maintaining a relative minimum pressure value and continuously up-dating it in accordance with the value of a newly taken sample,

(c) starting a time measure whenever said relative peak pressure value is up-dated,

(d) determining the pressure rises which occur during said time measure, and

(e) when said time measure reaches a predetermined length, determining that a sufficiently high occluding pressure exists if the maximum pressure rise during said time measure was less than a pre-set threshold value.

4,338,950

SYSTEM AND METHOD FOR SENSING AND MEASURING HEART BEAT

Carl A. Barlow, Jr., and Lee R. Reid, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 22, 1980, Ser. No. 189,400

Int. Cl.³ A61B *5/02*

U.S. Cl. 128—687 **23 Claims**

1. A body-mountable instrument for detecting and measuring heart beat of a user, comprising:

(a) first sensor means for detecting pulsing of the user's blood resulting from the user's heart beat and body movement and generating a first electrical signal indicative thereof;

(b) second sensor means for detecting the user's periodic body movement and generating a second electrical signal indicative thereof; and

(c) processing means responsive to said first and second electrical signals for determining the period of the second electrical signal and for substracting a first portion of the first electrical signal occurring during a first time interval

from a corresponding second portion of said first electrical signal occurring during a second time interval, said first and second time intervals being separated by a time period equivalent to nt, where n is an integer and t is the period of said second electrical signal, thereby separating body movement from heart beat in the first electrical signal.

4,338,951

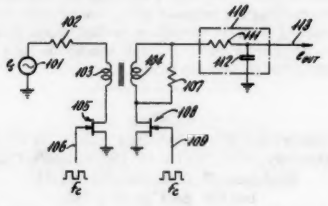
MAGNETICALLY COUPLED ISOLATION INTERFACE CIRCUIT

Thomas V. Saliga, Tampa, Fla., assignor to Critikon, Inc., Tampa, Fla.

Filed Aug. 19, 1980, Ser. No. 179,614

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—695 **6 Claims**



1. An isolation/interface circuit, for coupling signals having a given frequency bandwith, from a source to a utilization apparatus comprising:

(a) a transformer having primary and secondary windings, said source providing signals to said primary and said utilization apparatus receiving signals from said secondary;

(b) first and second switch means, respectively serially connecting said primary and secondary windings to a datum;

(c) means for synchronously alternately enabling and disabling said switch means at a predetermined frequency larger than any in said given frequency bandwidth;

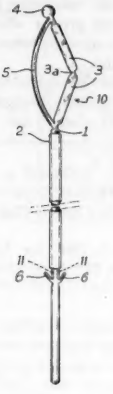
(d) low pass filter means serially intermediate said secondary winding and said utilization apparatus, said filter means having a frequency response characteristic which blocks signals at said predetermined frequency but which substantially passes said given frequency band.

4,338,952

DEVICE FOR TAKING SAMPLES OF ENDOMETRIUM

Jacques Augros, Villiers le Bel, France, assignor to Arts et Techniques Nouvelles, Paris, France

Filed Jan. 18, 1980, Ser. No. 113,254
Claims priority, application France, Jan. 24, 1979, 79 01832
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—757 7 Claims



1. In a device for taking samples of endometrium, or curette, comprising a rod, a tube, at least one scraper element of elongated form and comprising at least one blade, said scraper element being fixed at the end of said rod which is slideable in said tube inside which said scraper element may be introduced by pulling said rod in said tube, and a bow-shaped member, said scraper element being arched and subtended by said bow-shaped member of which the convex side is facing away from said scraper element, said scraper element and said bow-shaped member lying in a common plane, the straight-line length of said bow-shaped member being shorter than the straight-line un-arched length of said scraper element so that, when said scraper element provided with said bow-shaped member is introduced into a cavity of a biological being wherein the cavity walls force the bow-shaped member toward said scraper element and said rod is pivoted about its axis, said scraper element undergoes a substantially helical torsion to angle said blade relative to said common plane.

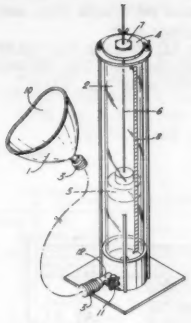
4,338,953

BREAST MEASURING APPARATUS

Christopher M. Ward, 44, Wensleydale Rd., Hampton, Middlesex, England

Filed Dec. 24, 1980, Ser. No. 220,253
Claims priority, application United Kingdom, Dec. 28, 1979, 7944551
Int. Cl.[3] A61S *5/10*
U.S. Cl. 128—774 6 Claims

1. Apparatus for use in estimating the volume of a human breast, comprising a cup having an inner surface and being adapted substantially to cover the breast, a flexible membrane coupled to said cup in a fluid-tight relation, the membrane defining, together with the inner surface of the cup, a variable volume space within the cup, a fluid container, means to vary the volume of fluid within the container, means for indicating changes in the volume of fluid within the container and means for coupling fluid within the container to the said space, whereby the membrane is firmly applied to the breast so that variations in volume of fluid in the said space result in corresponding variations in volume of fluid within the container to



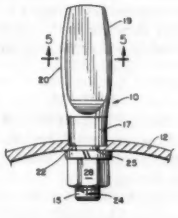
thus indicate the volume of said breast without fluid contacting said breast.

4,338,954

COMBINE CYLINDER REEL TOOTH

Robert J. Kirst, and Frederick H. Oppenhuisen, both of Buchanan, Mich., assignors to National-Standard Company, Niles, Mich.

Continuation of Ser. No. 73,683, Sep. 10, 1979, abandoned, which is a continuation of Ser. No. 827,555, Aug. 25, 1977, abandoned. This application Feb. 11, 1981, Ser. No. 233,662
Int. Cl.[3] A01F *12/22*
U.S. Cl. 130—27 G 4 Claims



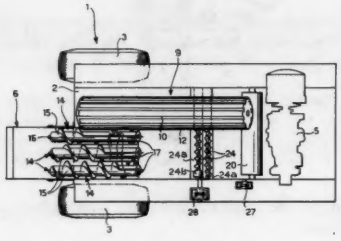
1. A cold-forged reel tooth mountable in a rotatable member of a threshing mechanism, said tooth being an elongated member comprising an elongated grain-contacting portion at one end, a stem portion at its other end and insertable into a recess in the rotatable member for fixedly mounting the tooth in the rotatable member, and a tapered seating portion intermediate the grain-contacting portion and the stem portion, the seating portion being adapted to be received in said recess, said grain-contacting portion being in the form of a blade having a thickness which decreases in the direction away from the seating portion of said blade and having planar surface sidewalls thereon and having a pair of oppositely facing edge surfaces each of which is convexly curved in two mutually perpendicular directions substantially to an arc of a parabola, one disposed in the elongated direction of the blade and the other transversely of the blade.

4,338,955

COMBINE HARVESTER HAVING AN AXIAL-FLOW THRESHING AND SEPARATING UNIT

Giuseppe Raineri, Bassano del Grappa, Italy, assignor to Pietro Laverda S.p.A., Breganze, Italy

Filed May 12, 1981, Ser. No. 262,880
Claims priority, application Italy, Jun. 19, 1980, 67960 A/80
Int. Cl.³ A01F *7/06, 12/10*
U.S. Cl. 130—27 AB **2 Claims**



1. In a combine harvester including:

an axial-flow threshing and separating unit comprising a threshing and separating cylinder disposed with its axis lying in a vertical plane extending longitudinally of the combine harverster, a counter-beater associated with said cylinder and in the shape of a concave grille, and a separator casing, substantially in the shape of a tubular body, having at least one portion constituted by a grille; and

means for feeding the harvested crop to said threshing and separating unit;

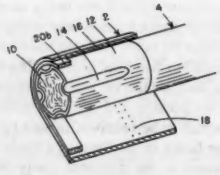
the improvement wherein the said threshing and separating unit is formed with a crop input opening arranged on one side thereof adjacent to its front end, and the said feed means comprises a series of feed cylinders arranged side-by-side, adjacent the said input opening, with their axes parallel to said longitudinal vertical plane, each of said feed cylinders having a first portion in the form of an auger, adjacent its front end, and a second portion adjacent its rear end, provided with at least one series of radial blades on its outer surface, the axial length of the said first portion being progressively greater for the feed cylinders the further away they are from said input opening of the axial-flow threshing and separating unit.

4,338,956

CIGARETTE FILTER

Robert A. Sanford, Prospect, and Robert R. Johnson, Louisville, both of Ky., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Dec. 5, 1980, Ser. No. 213,441
Int. Cl.³ A24D *3/04*
U.S. Cl. 131—336 **7 Claims**



1. A filter rod for a cigarette tobacco column comprising:

a porous filter rod of cylindrical configuration;

a smoke impervious wrapper extending longitudinally along said rod from one end thereof and circumscribing said rod leaving flow-through opposed ends of said rod, said wrapper having at least one longitudinally extending groove embedded into the filter rod and that portion of the wrapper defining the groove remaining smoke impervious, said groove being open ended at and extending from one of said ends a distance less than the length of the filter rod;

tipping material extending longitudinally of and circumscribing said wrapper, said tipping material being air pervious and permitting ventilating air flow therethrough into said groove, said ventilating air being the only fluid flowing through said groove when the filter is used in combination with a cigarette tobacco column during normal smoke draw; and,

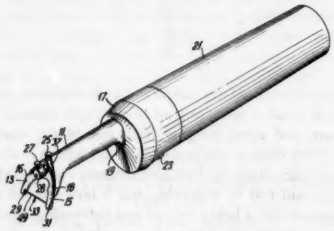
support means for said tipping material added at the mouth end of the filter to maintain circumferential consistency of said tipping material when in use.

4,338,957

DENTAL PROPHYLAXIS DEVICE AND PROCESS

Robert H. Meibauer, 1106 Channel Club Dr., Monmouth Beach, N.J. 07750

Filed Nov. 5, 1980, Ser. No. 204,222
Int. Cl.³ A61C *15/00*
U.S. Cl. 132—91 **21 Claims**



1. In a device for dental prophylaxis, the combination comprising:

housing means provided with an axial cavity and having a pair of spaced, stationary tynes provided with slotted openings disposed thereon and projecting outwardly therefrom, stationary support means on said housing in the vicinity of the base of said tynes, and oscillating support means located on said housing between the bases of said tynes and supported on a cylindrical sleeve disposed axially within said cavity, said housing means being adapted to be connected to driving means to drive said oscillating support means through said cylindrical sleeve.

16. A dental floss comprising a thread segment having a non-elastic loop at one end and an elastic loop at the opposite end, said elastic loop being under positive tension at all times and providing tension control of said floss and substantially eliminating point to point contact of dentition and said floss when in use to floss a dentition.

4,338,958

SPRAY BOOTH ASSEMBLY FOR WASHING OR CHEMICALLY TREATING OBJECTS OF DESIRED KIND

Junji Fujita, 781-1, Tateishi-machi, Tosu-shi, Saga-ken, Japan

Filed Jan. 26, 1981, Ser. No. 228,521
Claims priority, application Japan, Jul. 10, 1980, 55-97640[U]; Oct. 8, 1980, 55-144588[U]; Oct. 8, 1980, 55-144589[U]; Oct. 8, 1980, 55-144590[U]
Int. Cl.³ B08B *3/02*
U.S. Cl. 134—104 **5 Claims**

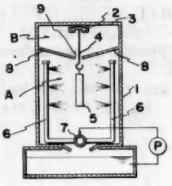
1. A spray booth assembly for washing or chemically treating objects of desired kind comprising

(a) a spray booth having an open-type tunnel-like construction, said spray booth provided with a longitudinal slit

opening on a ceiling thereof said longitudinal slit opening forming a hanger path,

(b) a hanger conveying means disposed above said ceiling of said spray booth in alignment with said hanger path,

(c) a plurality of vertical hangers movably suspended through said hanger path down into said spray booth from said hanger conveying means at desired intervals, said each hanger a lower extremity thereof provided with an object to be sprayed,



(d) spray means disposed within said spray booth for spraying water or other chemical solvent onto said object to be sprayed, and

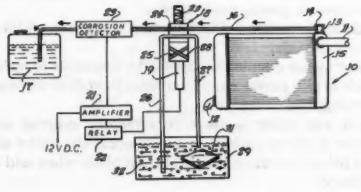
(e) means for producing a vacuum zone at or below said hanger path, whereby said spray booth assembly can prevent the water or chemical moisture from flowing out through said hanger path toward said hanger conveying means.

4,338,959

DEVICE TO AUTOMATICALLY ADD A CONTROLLED AMOUNT OF CORROSION INHIBITOR IN AN ENGINE COOLING SYSTEM

Robert H. Krueger, Palatine; Robert R. Kelly, Hoffman Estates; Rudolf M. Hempel, Palatine, all of Ill., and Bruce P. Miglin, Columbus, Ohio, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 29, 1980, Ser. No. 201,859
Int. Cl.³ F28F *19/00*
U.S. Cl. 137—93 **12 Claims**



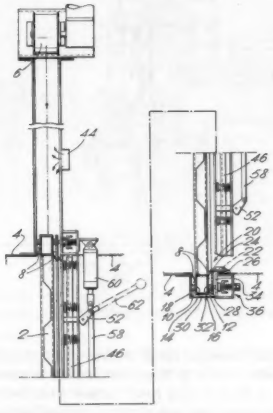
1. A control system for the automatic addition of a chemical additive to a solution requiring treatment, comprising a circulating fluid system for the solution requiring treatment, a sensor inserted in the system in contact with the fluid to determine the level of treating chemical therein and issue a signal when the level decreases below a predetermined value, the improvement comprising a closed chemical treating solution reservoir containing solid treating chemical to be dissolved and chemical treating solution, a control valve controlling liquid flow from said fluid system to said reservoir for positive displacement of treating solution from said reservoir to said system and an inlet and an outlet for said reservoir in communication with the circulating fluid system, a solenoid to actuate said valve, and an electric circuit receiving the signal from the sensor and actuating said solenoid.

4,338,960

GUILLOTINE TYPE DAMPER

Ronald A. Ashdown, Redhill, England, assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Aug. 5, 1980, Ser. No. 175,562
Int. Cl.³ F16K *3/36*
U.S. Cl. 137—240 **5 Claims**



1. A guillotine damper in combination with a duct comprising a duct, said duct being rectangular in cross section, a first flange extending perpendicular to and outward from said duct, an outer wall extending perpendicular to said flange and parallel to said duct, a second flange perpendicular to said outer wall and parallel to said first defined flange and defining with said first flange and said outer wall a plenum impervious to the ambient medium and open to said duct, a frame, said frame having an outwardly projecting fin extending into said plenum and parallel with said first and second flanges, an integral axial portion perpendicular to said fin and positioned within said duct, a roller mounted on said axial portion and bearing on the inside of said duct, a resilient seal between said axial portion and said duct for preventing the flow of fluid between said duct and said axial portion into said plenum, a damper blade movable across said duct to close same, first and second sealing surfaces extending within said plenum, said first sealing surface being mounted on said first flange and said second sealing surface being mounted on said second flange, means to urge said frame toward said first flange so that said fin compresses said second sealing surface against said blade and said blade compresses said first sealing surface so that the portion of the duct on one side of the blade is completely sealed from the portion of the duct on the other side of the blade.

4,338,961

VALVE FOR HANDLING HOT CAUSTIC ALUMINA SOLUTION WITH PROVISION FOR GRINDING

Anatole N. Karpenko, San Francisco, Calif., assignor to Anchor/Darling Valve Company, Bala Cynwyd, Pa.

Filed Aug. 7, 1980, Ser. No. 176,005
Int. Cl.³ B24B *15/02*
U.S. Cl. 137—243.2 **11 Claims**

1. A valve comprising,

a valve body having a valve seat,

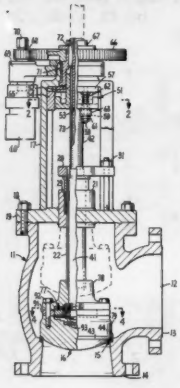
a closure member formed to fit said seat and control the flow through said valve body,

stem means for moving said closure member toward and

away from said valve seat to cause frictional engagement of said closure member on said seat,

rotating means operatively connected to said valve stem means for rotating said closure member relative to said seat to effect a grinding thereof, and

trip means being mounted on rotor means positioned on the lower end of said valve stem means capable of interrupting the rotational movement of said closure member at a



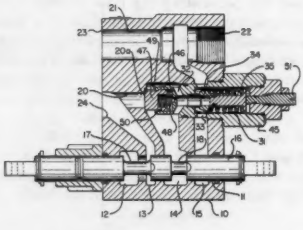
preselected frictional force between said closure member and said seat, said trip means including members slidably mounted in slots in said rotor means with one end of said slidable members engaging spring means located in recesses in said rotor means and the other end of said slidable members engaging cam means on a fixed member mounted within said closure member for radial movement, whereby said trip means operates independently of pressure within the body of said valve.

4,338,962

CONTROL AND RELIEF VALVES

John D. Turko, and John D. Petro, both of Hubbard, Ohio, assignors to Commercial Shearing, Inc., Youngstown, Ohio

Filed Aug. 13, 1980, Ser. No. 177,928
Int. Cl.³ F15B *13/04*
U.S. Cl. 137—269 **6 Claims**



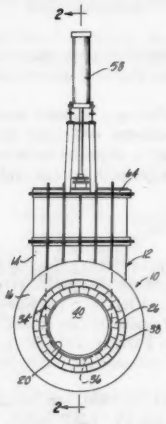
1. A pump control valve and relief assembly comprising a valve housing having a main bore therethrough, a spool movable in said bore and having a pair of spaced annular grooves therein, a spaced relief bore in said housing, a pump chamber and a work chamber in said housing intersecting both bores, a pair of tank chambers, one on each opposite side of the pump and work chambers intersecting said main bore, said tank chamber adjacent the work chamber intersecting the relief bore, a tank bore connecting said tank chambers, an inlet return bore intersecting said tank chamber adjacent the work chamber, an inlet port connected to said relief bore and pump chamber and adapted to connect to a pump outlet port, a tank port connected to said tank bore, a pump inlet port and a return port connected to said inlet return bore, said pump inlet port adapted to connect to a pump inlet port and the return port adapted to be connected to a source of return fluid, and a combination check and relief valve assembly in the relief bore at the cylinder chamber acting as a check between the inlet port and work chamber and relieving excess pressure from said work chamber to said adjacent tank chamber.

4,338,963

HIGH TEMPERATURE GATE VALVE WITH FUSED SILICA BLADE

Douglas J. Frame, Pontiac, Mich., assignor to C & H Combustion, Troy, Mich.

Filed Jan. 28, 1980, Ser. No. 116,178
Int. Cl.³ F16K *3/314*
U.S. Cl. 137—375 **9 Claims**



1. In a valve for controlling the flow of high temperature fluids, the improvement comprising:

a housing having an opening defining an inlet and an outlet for the fluid;

an inner annular collar surrounding the opening and having a transverse passageway therein;

a blade made of fused silica consisting of at least 95% pure silicon dioxide;

actuator means coupled to said blade, operative to move the blade in said passageway to control fluid flow through the opening; and

wherein said collar is made of refractory material and includes a silicon carbide insert adjacent the outlet side of said blade, operative to contact said blade when said valve is closed.

4,338,964

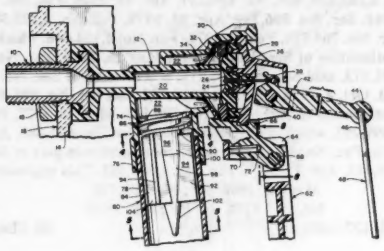
SIDE INLET BALLCOCK HAVING FLOW AND STRUCTURAL IMPROVEMENTS

Adolf Schoepe, 1620 N. Raymond Ave., Fullerton, Calif. 92631

Filed Dec. 29, 1980, Ser. No. 220,812
Int. Cl.³ F16K *31/18;* **F16L** *15/02*
U.S. Cl. 137—436 **9 Claims**

1. In a side inlet ballcock of the type having a generally horizontal valve inlet portion directing water through a float controlled valve into a generally horizontal valve outlet portion and from said valve outlet portion downwardly into a generally vertical outlet tube; the improvements including: a flow diverter at upper initiation of said outlet tube having a progressively downwardly extending, generally helical groove formed therein terminating downwardly in a generally vertical

groove formed therein, said helical groove having an upper, generally horizontally extending inlet positioned receiving a generally horizontal flow of water from said generally horizontal valve outlet portion directly into a spiral flow pattern and a lower outlet directing said spiral flow into an upper inlet of said vertical groove, said vertical groove having a lower outlet directing said flow downwardly into said outlet tube, said vertical groove being of greater horizontal cross-section



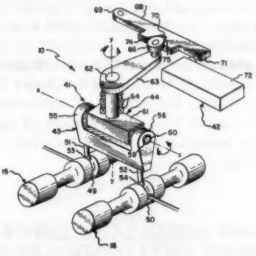
throughout than cross-section of said helical groove and of less horizontal cross-section throughout than horizontal cross-section of said outlet tube; said horizontal flow of water from said valve outlet portion being first directed horizontally into a downward spiral by said diverter helical groove and ultimately into a straight downward expanded flow by said diverter vertical groove for substantially straight downward and further expanded flow through and from said outlet tube.

4,338,965

SELF-MONITORING DUAL-SPOOL SERVOVALVE

Kenneth D. Garnjost, Orchard Park, and John S. Ballard, South Wales, both of N.Y., assignors to Moog Inc., East Aurora, N.Y.

Filed Jun. 2, 1980, Ser. No. 155,550
Int. Cl.[3] F15B *13/043, 20/00*
U.S. Cl. 137—554 **26 Claims**



20. In a servovalve having first and second members mounted for independent sliding movement relative to a body along parallel axes, having a first driver operatively arranged to cause a desired motion of said first member, and having a second driver operatively arranged to cause a desired simultaneous motion of said second member, the improvement which comprises:

a differential position sensing mechanism arranged to sense the relative positions of said members and operative to move pivotally about one axis when said members move similarly and to move about another axis when said members move dissimilarly for causing an arcuate output position in a plane only when said members move dissimilarly; and

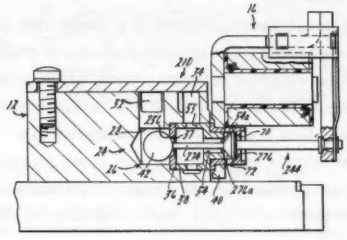
an indicating device supplied with said output position and operative to indicate dissimilar movement of said members.

4,338,966

DIRECT SOLENOID OPERATED DIRECTIONAL CONTROL VALVE

Robert H. Smith, Rochester, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Division of Ser. No. 10,649, Feb. 9, 1979, abandoned. This application Jan. 26, 1981, Ser. No. 228,843
Int. Cl.[3] F15B *13/044*
U.S. Cl. 137—596.17 **1 Claim**



1. A normally vented solenoid operated directional control valve for a hydraulic fluid responsive device comprising:

A. a housing;

B. a stepped valve blind bore formed in said housing defining a reduced diameter inner portion and an enlarged diameter outer chamber portion;

C. first and second passage means formed in said housing at longitudinally spaced locations along the axis thereof and adapted to be connected to a source of pressurized fluid and a fluid responsive device, respectively, said first passage means communicating with said valve bore inner portion;

D. an hydraulic valve assembly comprising a seat member, a retainer member, a guide member, a ball and an actuating plunger; said seat member formed as a disc having a central bore, said seat member received in said chamber portion abutting the shoulder thereof, said retainer member including a large diameter portion and a reduced diameter neck portion formed with a central stepped through bore, defining an enlarged diameter valve portion and a reduced diameter connecting passage portion, said large diameter portion telescopically received in said stepped bore chamber portion, said enlarged diameter valve portion having cross ports communicating with said second passage means;

E. a central bore in said disc forming a first valve seat defined about the axis of said valve stepped blind bore intermediate said first and second passage means locations;

F. said ball carried in said reduced diameter inner portion intermediate said first passage means and said first valve seat and normally urged into a first position effecting sealing engagement with said first valve seat by said pressurized fluid;

G. a cylindrical guide member including an elongated solenoid mounting portion having a central through guide bore sized to telesopically receive therein said retainer neck portion, said guide bore arranged coaxially with said stepped valve through bore, said guide bore having a plunger access opening at its outer end and a stop shoulder intermediate its inner and outer ends, said guide member having cross ports therein, said retainer neck portion defining a second valve seat intermediate said second passage means and said guide member cross port;

H. said plunger member having a ball engaging tip portion, a chamfered valve portion, and a guide portion, said plunger member guide portion slidingly received in said

guide bore and movable between a solenoid deenergized normal position wherein said tip portion is in close juxtaposition with said seated valve ball and a solenoid actuated position wherein said valve ball is driven by engagement of said plunger member tip portion to a second portion in said blind bore reduced diameter inner portion wherein said chamfered valve portion sealingly engages said said second valve seat to block fluid communication between said second passage means and said guide member cross ports;

I. a solenoid assembly including a clapper-type solenoid having bracket means attaching said solenoid to said guide member elongated mounting portion, said solenoid selectively operative to exert force along an axis parallel to but spaced from said stepped bore longitudinal axis;

J. said solenoid including armature means pivotally connected to said solenoid bracket means for reciprocal movement with respect thereto responsive to said solenoid force;

K. armature retaining means for pivotally connecting said armature means to said plunger member whereby reciprocal pivotal movement of said armature means effects said axial movement of said plunger member and said driving abutting engagement of said ball to said second position;

L. said armature connecting means including a retaining member having a substantially U-shaped strap portion for securing said armature means to said bracket means and a leaf spring portion extending perpendicularly from said strap portion, said leaf spring operative to urge said plunger member guide portion into contact with said guide bore stop shoulder such that said leaf spring establishes the normal position of said plunger guide portion to locate said stem portion in juxtaposition with said ball to obviate impact loading of said ball; and

M. said plunger member having a rod portion extending outwardly from said plunger guide portion and terminating in a plunger connecting portion, said rod portion having a large diameter portion defining an outwardly facing chamfer joined at its outer diameter with said plunger connecting portion, said armature having a through aperture at its free end remote from its point of pivotal support on said bracket means, said through aperture inner terminus formed with a chamfer sized to cooperatively abuttingly engage said rod portion outwardly facing chamfer, effecting self-centering of said plunger member relative to said fluid chamber longitudinal axis, whereby when said solenoid is deenergized pressurized fluid is normally vented from said fluid responsive device through said second passage means, said retainer member cross ports, said retainer member central bore large diameter valve portion and said retainer member connecting passage for venting from said guide member cross port.

4,338,967

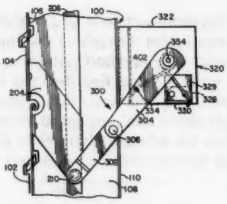
UNIVERSAL LINK BAR OPERATOR AND ACTUATOR FOR ROTATING BLADE AIR, SMOKE, AND FIRE DAMPERS

Francis J. McCabe, Doylestown, Pa., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 16,514, Mar. 1, 1979, which is a continuation-in-part of Ser. No. 905,211, May 12, 1978, Pat. No. 4,183,129, Ser. No. 896,237, Apr. 14, 1978, Pat. No. 4,219,041, Ser. No. 896,299, Apr. 14, 1978, Pat. No. 4,195,384, and Ser. No. 764,774, Feb. 2, 1977, Pat. No. 4,114,646, which is a continuation of Ser. No. 689,994, May 26, 1976, Pat. No. 4,081,173, said Ser. No. 905,211, is a division of Ser. No. 729,813, Oct. 4, 1976, Pat. No. 4,113,232, said Ser. No. 896,299, is a continuation-in-part of Ser. No. 799,044, Mar. 18, 1977, Pat. No. 4,099,292, which is a continuation of Ser. No. 676,483, Apr. 13, 1976, Pat. No. 4,041,570, and a continuation-in-part of Ser. No. 676,413, Apr. 13, 1976, Pat. No. 4,040,304. This application May 30, 1980, Ser. No. 154,713

Int. Cl.[3] F24F *13/14*; F16K *1/22*

U.S. Cl. 137—601 **20 Claims**



1. An operator for operating a parallel, multi-blade damper having a frame and at least one blade adapted for rotation within the frame between an open position and a closed position, wherein said operator comprises:

(a) at least two, pivotally interconnected operator members, a first operator member being operatively associated with the frame of the damper and a second operator member being operatively associated with the damper blade; and

(b) actuator means operatively associated with at least one of the two operator members;

wherein operation of the actuator means causes articulation of the operator members, which in turn causes rotation of the damper blade, so that the amount of rotation of the damper blade which is caused by a given amount of operation of the actuator means increases as the damper blade moves toward the open position.

4,338,968

HIGH FLOW ACCUMULATOR DEVICE HAVING POPPET VALVE CONTROL MEANS

Jacques H. Mercier, Paris, France, assignor to Normand Trust, New York, N.Y.

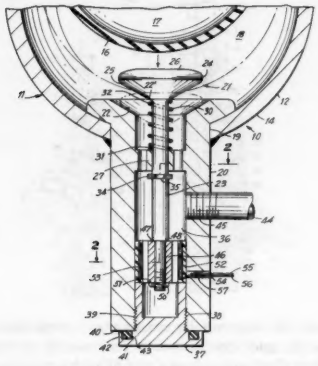
Filed Sep. 19, 1980, Ser. No. 188,861

Int. Cl.[3] F16L *55/04*

U.S. Cl. 138—30 **6 Claims**

1. A pressure accumulator comprising a rigid container having a gas port and an oil port, a deformable partition in said container intervening between said ports and defining a gas chamber in communication with said gas port and an oil chamber in communication with said oil port, a fitting connected to said oil port having a valve seat at its inner end, a poppet valve associated with said valve seat, a valve stem extending axially in said fitting and having one end thereof secured to said poppet valve, resilient means normally urging said poppet valve to open position with respect to said valve seat, said fitting having port means for charging of said oil chamber and for discharge of oil under pressure therefrom, additional means associated

with said valve stem to restrain movement of said poppet valve from said open position against the force resulting from high flow past said poppet valve into said fitting and discharging through said port means, and means cooperating with said



additional means to decouple said additional means from said stem to permit movement of said poppet valve to closed position against said seat when required to prevent extrusion of said partition through said oil port.

4,338,969

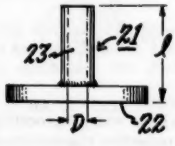
THROUGH FAULT PRESSURE FILTER FOR FAULT PRESSURE RELAY

Gerald O. Usry, 13 Westlyn Dr., Rome, Ga. 30161

Filed Dec. 9, 1977, Ser. No. 858,966

Int. Cl.³ F16D *1/02*

U.S. Cl. 138—44 **3 Claims**



1. A through fault pressure filter for attenuating through fault pressure variations in a fluid media comprising:

a base member having a passage communicating from one end of the base member to another end of the base member; and

a stem portion extending from said base member and having a passage communicating with the passage through the base member and a length such that the diameter of the passage and the length of the stem provide an attenuation path for periodic varying pressure disturbances wherein the ratio of the length of the stem to the diameter of the passage ranges from 10 to 1 to 40 to 1 for attenuating periodic pressure disturbances having a frequency range of from 50 to 360 Hz.

4,338,970

RECOVERABLE SLEEVE

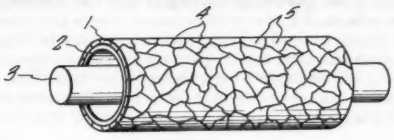
Joseph J. Krackeler, Los Altos Hills, and Fred E. Weir, Atherton, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jun. 16, 1975, Ser. No. 586,901

The portion of the term of this patent subsequent to Jan. 31, 1995, has been disclaimed.

Int. Cl.³ F16L *9/14;* **H01B** *7/00;* **B29C** *27/00;* **B32B** *31/00*

U.S. Cl. 138—141 **31 Claims**



1. A recoverable tubular article comprising:

a recoverable tubular sleeve held under tension in a radially expanded condition by an essentially tubular restraint disposed about and in bonded relationship to the radially outward exterior of said sleeve;

said restraint being capable of being mechanically segmented so as to release said tension and permit recovery of said sleeve and being sufficiently rigid in its unsegmented condition to maintain said sleeve in the expanded, recoverable condition.

4,338,971

DEVICE FOR TRANSFERRING A WEFT THREAD IN A SHUTTLELESS LOOM

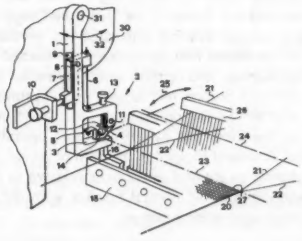
Anton Lucian, and Rudolf Zwiener, both of Arbon, Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Sep. 22, 1980, Ser. No. 189,012

Claims priority, application Switzerland, Oct. 1, 1979, 8828/79

Int. Cl.³ D03D *47/12*

U.S. Cl. 139—194 **8 Claims**



1. A device for transferring a weft thread from a weft thread beaten-up position to a path of movement of a weft thread picker of a shuttle loom having a batten, particularly a gripper loom, comprising:

a transfer mechanism controllable in synchronism with the movement of a loom batten;

said transfer mechanism comprising:

a transfer lever mounted for executing an oscillatory movement;

said transfer lever including a fixed clamping surface cooperating with a movable clamping surface;

said movable clamping surface being constituted by a leaf spring extending substantially perpendicular to a picking direction of the weft thread;

an actuating lever pivotably mounted on the transfer lever;

said leaf spring having a tongue;

means for connecting said actuating lever with said tongue of the leaf spring to effect momentary opening of said two clamping surfaces; and

an adjustable stop provided at the region of the pivotal movement of the transfer lever and arranged to cause a relative countermovement of the actuating lever when the actuating lever strikes said stop, in order to thereby cause momentary opening of said two clamping surfaces.

4,338,972

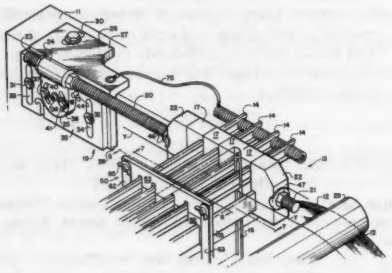
PIVOTAL SUPPORT WITH POSITIVE STOP WARP STOP-MOTION

John B. Sherrill, Hickory Grove Rd., Gastonia, N.C. 28052

Filed Mar. 10, 1980, Ser. No. 129,105

Int. Cl.³ D03D *51/28*

U.S. Cl. 139—369 **5 Claims**



1. In a loom having a frame, a warp beam and a stop-motion mechanism through which ends of yarn extend from the warp beam, a support assembly extending between said stop-motion mechanism and the frame of the loom, said support assembly including a pivotal bracket journaled for pivotal movement relative to the frame and operatively connected to the stop-motion mechanism, said support assembly including means for locating the stop motion mechanism in an optimum operating position and means for pivoting the stop-motion mechanism away from the loom and out of optimum operating position, and a fixed abutment located in the path of travel of the pivotal bracket during its pivotal movement relative to the frame to engage and support the pivotal bracket with the stop-motion mechanism in operative position.

4,338,973

CATCH MECHANISM FOR A WEAVING MACHINE

Rudolf Stauner, Constance, Fed. Rep. of Germany, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed May 23, 1980, Ser. No. 152,546

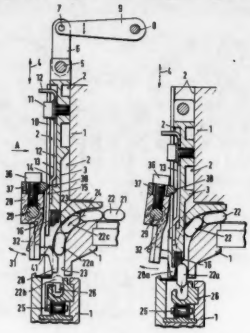
Claims priority, application European Pat. Off., Jun. 1, 1979, 79101734.6

Int. Cl.³ D03D *47/24*

U.S. Cl. 139—439 **10 Claims**

1. A catch mechanism for a weaving machine, said catch mechanism having

a channel for receiving a sequential series of weft insertion gripper projectiles, said channel having a horizontal section and a vertical section; and



an ejector for sequentially ejecting each projectile from said channel, said ejector being reciprocally movable in a straight line path into and out of said vertical section.

4,338,974

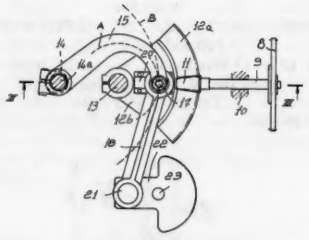
CONTROL DEVICE FOR RECIPROCATING GRIPPERS IN SHUTTLELESS LOOMS

Mazzino Mazzini, Via Serragliolo, 39 - Agliana - (Province of Pistoia), Italy

Filed Apr. 11, 1980, Ser. No. 139,497

Int. Cl.³ D03D *47/00*

U.S. Cl. 139—449 **9 Claims**



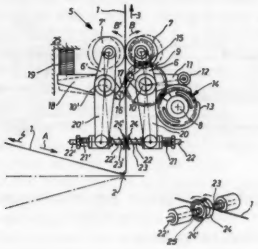
1. In a shuttleless loom with reciprocating weft thread insertion grippers and a respective transmission system for carrying said insertion grippers and cooperating with a respective gear wheel driving said respective transmission system, an actuating device for imparting reciprocating movement to said transmission system comprising a rocker arm including a pin at one end thereof and a pivot at the other end thereof, a connecting rod and crank assembly driven by a cyclic shaft of the shuttleless loom and including a linkage member having an articulation end thereof, an oscillating gear sector in driving engagement with said gear wheel and having a bisecting line thereof, said gear sector having (substantially along) the bisecting line thereof a slotted link type coupling including a slider, said coupling providing articulation both with said end of said linkage member of said connecting rod and with said pin of said rocker arm following the oscillations of said gear sector, thereby to guide the movement of said articulation end of said linkage member.

4,338,975

THREAD BRAKE FOR A TEXTILE MACHINE

Allan W. H. Porter, Lustmuehle, Switzerland, assignor to Adolph Saurer Ltd., Arbon, Switzerland

Filed Jan. 14, 1980, Ser. No. 111,645
Int. Cl.³ D03D 47/34
U.S. Cl. 139—450 6 Claims



1. A thread brake for a textile machine provided with a drive mechanism in which a thread is guided through a gap provided between two opposed brake shoes operatively connected to holders comprising:

means for moving at least one of said holders between two end positions in the direction of said gap towards said opposed shoe;

means indirectly connecting said means for moving at least one of said holders to said drive mechanism of said textile machine for synchronizing the movement of said one of said holders with the operation of said textile machine: and

said opposed brake shoes being constructed as disks and mounted rotatably on approximately coaxial journals on opposed bearing axes which are offset with respect to the path of the thread, and said brake shoe connected to the movable holder is axially displaceable against a spring which is unloaded in one of said end positions and in this end position is at a distance from the other brake shoe generally corresponding to the thread thickness so that a slight constant friction exists between said thread and shoes;

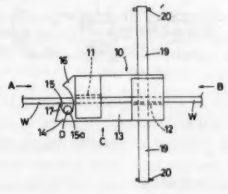
whereby said shoes are rotated and cleaned of fluff and the like.

4,338,976

TOOL FOR ATTACHING A DROPPER TO A FENCE WIRE

Neill F. Stevens, 47a Wellesley Rd., Napier, New Zealand

Filed Apr. 18, 1980, Ser. No. 142,574
Claims priority, application New Zealand, Apr. 19, 1979, 190227
Int. Cl.³ B21F 27/08
U.S. Cl. 140—12 10 Claims



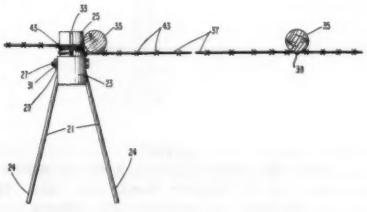
1. A tool for attaching a wire dropper to a wire of a fence line comprising a body with a first wire engagement means for reception of a fence wire, lever mounting means for the reception of a lever whereby said body is rotated by said lever about a rotational axis of said body which is parallel with the longitudinal axis of said fence wire, when the fence wire is engaged in said first wire engagement means, second wire engagement means for the reception of a wire dropper, said second wire engagement means located substantially at right angles to said first wire engagement means so that a dropper engaged in said second engagement means lies at right angles to said fence wire, said second wire engagement means comprising a support recess which is located in said body in a position which is to one side of the rotational axis of said body, the support recess terminating at a distance from said rotational axis which is at least equal to the sum of the radii of said fence wire and said dropper, the body further including ramp means located adjacent said support recess whereby with a fence wire and a dropper wire received in the respective first and second wire engagement means and the body rotated about said rotational axis the dropper wire is wound around said fence wire and said ramp means engages with said dropper wire to cause deflection thereof such that said dropper wire is coiled about said fence wire.

4,338,977

MANUAL TOOL FOR STRETCHING WIRE HAVING DIVERGING HANDLES

Joseph B. McNully, Rte. 4, Box 393, Seminole, Okla. 74868

Filed Jul. 14, 1980, Ser. No. 168,131
Int. Cl.³ B21F 25/00
U.S. Cl. 140—70 8 Claims



8. A tool for stretching barbed wire during securement thereof to a post, the tool comprising:

a handle including a pair of elongated arms diverging from forward ends thereof such that the distance between longitudinal axes of the arms increases;

an element connected to the forward ends of the arms, the element including a forwardly open cylindrical socket;

a cylindrical member mounted in the socket and projecting forwardly therefrom, the member including an open-sided slot extending rearwardly from a forward end of the member to receive barbed wire, said member being penetrable by barbs on the wire; and

connecting means for releasably connecting the member to the element such that rotation of the arms produces rotation of the member along a longitudinal axis thereof so that the member rolls along a side of a post while wrapping and stretching wire received in the slot.

4,338,978

LEAD CHLORIDE BATTERY PLATE

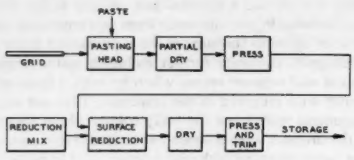
John L. Devitt, Denver; Douglas E. Johnson, Grand Junction, and Robert S. Willard, Denver, all of Colo., assignors to Sparton Corporation, Jackson, Mich.

Division of Ser. No. 131,027, Mar. 17, 1980, Pat. No. 4,262,069.
This application Oct. 28, 1980, Ser. No. 201,581
Int. Cl.³ H01M 4/82
U.S. Cl. 141—1.1 3 Claims

1. The method of forming a positive plate for a battery wherein the active material reduced during electrical energy generation is primarily lead chloride comprising the steps of:

(a) forming a spreadable paste consisting of lead chloride powder mixed with a resinous organic binder in liquid form,

(b) spreading said paste in a substantially uniform thickness upon an open mesh grid formed of an electrical conducting material in a manner whereby the grid remains adjacent a primary surface of the plate and is exposed at said primary plate surface.



(c) applying a mixture consisting of water and a reducing metal powder selected from the group consisting of zinc, iron, manganese, titanium, aluminum and magnesium to the primary surface of the plate at which said grid is exposed to convert the lead chloride adjacent said grid to metallic lead,

(d) and drying the plate after the conversion of said primary surface of lead chloride to metallic lead.

4,338,979

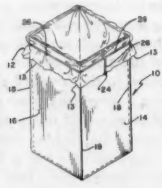
BAG HOLDING DEVICE AND PROCESS

Ray A. Dow, 412 NE. Wilshire, Bartlesville, Okla. 74003

Filed Nov. 12, 1980, Ser. No. 205,948

Int. Cl.³ B65B *1/04*

U.S. Cl. 141—10 **7 Claims**



1. A device for holding a bag comprising a box-like structure including a pair of side walls joined to a pair of end walls along corner score lines, said structure folding along said corner score lines into a generally flat posture; said box-like structure having corner structure defining a notch in at least two of said corner score lines; elastic means for encircling the outside of the box-like structure while residing in said notch, said device being adapted for inserting the bag into the structure and overlapping the periphery of the mouth of the bag over an edge of the box-like structure and said elastic means encircling the overlapping portion of said bag and lodging within the notches at the corners of the box-like structure so as to hold the bag in an open position and prevent displacement of the bag from the device; at least one of said side walls and at least one of said end walls each having a structure defining a rubber band extension aperture, said elastic means being retained in said extension apertures of said side and end walls simultaneously to encircling said structure and residing in said notch.

4,338,980

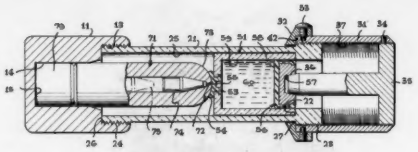
DEVICE FOR FILLING MEDICAMENT INJECTORS

Paul R. Schwebel, 44045 15th St. West, Lancaster, Calif. 93534, and Manuel N. Friend, 311 Bruce La., Turlock, Calif. 95380

Filed Jan. 14, 1980, Ser. No. 111,939

Int. Cl.³ B65B *3/32*

U.S. Cl. 141—18 **14 Claims**



1. A front-filling dispenser for introducing liquid medicament into a needleless injector having a tip containing an injection orifice, comprising:

a vial adapted to contain such medicaments;

a resilient plug effectively sealing one end of said vial, said plug having a self-sealing passage therethrough and being deformable to conform sealingly with the tip of said injector;

means releasably positioning said injector with respect to said vial, for bringing the passage in said plug into communication with said orifice and maintaining said plug in sealing contact with said tip;

means for varying the volume of said vial and thereby forcing said medicament through said passage and orifice; and

manually manipulable means, precisely calibrated in terms of medicament volume, for operating said volume varying means and thereby controlling the volume of medicament transfered from said vial into said injector.

4,338,981

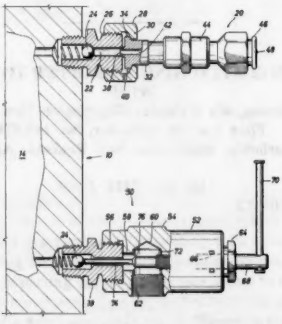
VALVE SERVICE APPARATUS

Dennis M. Frauenberger, 7915 E. Elm St., Houston, Tex. 77012

Filed Apr. 4, 1980, Ser. No. 137,397

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—85 **5 Claims**



1. For drainage of a cavity within a valve body wherein the valve body has first and second check valve fittings communicating from the exterior to the cavity, an apparatus which comprises:

(a) a fill fitting including:

1. an end-located threaded coupling having a mating joinder means to enable said coupling to be engaged with a check valve fitting opening into the cavity;

2. an elongate body secured by said coupling, said body having an axial internal passage communicated with an

opening against the check valve fitting to introduce fluid flow therethrough;

3. an end-located connector on said body to enable connection with a pump delivering fluid for the cavity therethrough; and

4. a weep hole extending through said coupling which is selectively communicated with said axial passage on disconnecting said coupling to enable pressure relief to fluid outside the check valve fitting and in said axial passage; coupling;

(b) a drain fitting which includes:

1. an elongate body having an external surface defined by a diameter enabling said body to be grasped by a hand tool such as a pipe wrench;

2. a tapped end-located hole in said body sized to thread to a check valve fitting opening into the cavity;

3. an axial internal passage along said body;

4. an elongate rod positioned in said passage, said rod held in said passage by mating threads which advance or retract the rod on rotation;

5. an end-located stinger rod portion on the end of said rod and having a length to extend through said passage within said body and to further extend in retractable fashion from said body into the check valve fitting where said stinger rod is adapted to contact the check valve and thereby defeat the check valve by forcing the check valve element open;

6. a lateral passage formed in said body;

7. joinder means cooperative with said lateral passage to enable a drain hose to be joined to said body, said lateral passage defining in conjunction with said axial passage a flow path from the check valve fitting for drainage; and

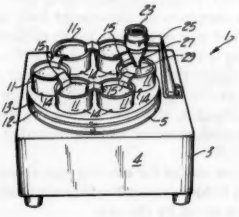
8. means for rotating said rod to advance or retract said rod between operative and nonoperative positions.

4,338,982

ROTATING RIFFLER

Michael A. Terminiello, Carmel, Ind., and Stanley E. Gebura, Mountain Lakes, N.J., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Nov. 24, 1980, Ser. No. 209,612
Int. Cl.³ B65B *43/56*
U.S. Cl. 141—132 **14 Claims**



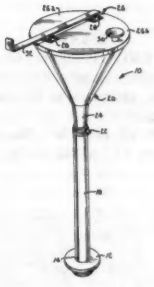
1. An apparatus for obtaining representative samples of material from a bulk quantity thereof comprising a revolvable first disk, individual readily portable containers resting upon said disk in close proximity to the periphery thereof, and so placed that their upper edges are adjacent to one another; a second disk resting upon said first disk, a ring member affixed to said first disk having an inside diameter slightly larger than that of said second disk such as to provide a snug fit and permit easy removal of said second disk, said second disk having openings defined therein of such size and shape as to closely fit the outside of said containers when said containers rest upon said first disk, said containers being replaceable by at least one different set of containers and said second disk being replaceable by at least one other disk having openings defined therein to closely fit said additional set of containers; a hopper for said bulk quantity of material provided with a discharge opening located over the path of travel of said containers for discharging a flow stream of the material thereinto; means to rotate said first disk thereby sequentially and repetitively moving said containers individually into intercepting relation with said flow stream whereby said sample containers each intermittently receives material which is only a portion of a sample from the bulk quantity so that a sample is built up in each of said sample containers over a period of time after repetitive movement of said sample containers into said intercepting relation with said flow stream.

4,338,983

OIL CAP WITH SELF CONTAINED FUNNEL

Floyd J. Hatcher, 1017 Harmon, St. Joseph, Mo. 64504

Filed Jul. 7, 1980, Ser. No. 166,343
Int. Cl.³ B65B *39/00*
U.S. Cl. 141—331 **2 Claims**



1. A device adapted to be permanently coupled with an engine for closing the oil intake port of the engine, said device comprising:

a cap which is engageable with said port and adapted to be sealingly received by said port,

said cap having an opening communicating with said port;

funnel means for directing oil into said port,

elongated neck means coupling the end of said funnel means with said cap opening; and

cover means coupled with said funnel means for closing said funnel,

said cover means presenting a first generally flat section rigid with said funnel means and a second generally flat section hingedly coupled with said first section and movable between open and closed positions; and

bracket means rigid with said first flat section for coupling the device with said engine.

4,338,984

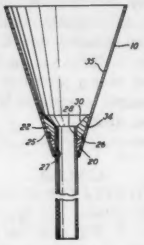
AUTOMOTIVE FLUID SUPPLY FUNNEL UNIT

Richard E. Kronberg, 2601 Knox Ave. N., Minneapolis, Minn. 55411, and Merlin L. Walters, 3214 Girard Ave. N., Minneapolis, Minn. 55412

Filed Aug. 11, 1980, Ser. No. 176,923
Int. Cl.³ B65B *39/00*
U.S. Cl. 141—331 **1 Claim**

1. A two part detachable funnel unit for use with automotive vehicles, comprising, a frustoconically shaped cone member, an elongated tube member positioned at one end of the frustoconically shaped cone member, a first generally conically shaped sleeve means attached to the lower end of the frustoconically shaped cone member, a second generally conically shaped sleeve means attached to the upper end of the elongated tube member, said first and second sleeve means being made of a yieldable material and having complementary conically shaped surfaces which provide sealing between said surfaces,

said members are assembled and said complementary conically shaped surfaces are pressed together to form a press fit, said



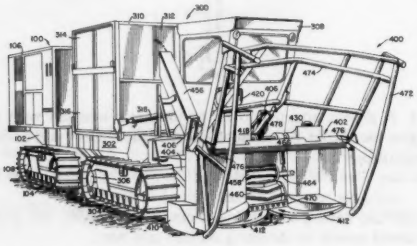
press fit serving to make said members readily attachable and detachable and to provide sealing between said members.

4,338,985

TREE AND BRUSHWOOD HARVESTER

Frederick M. Smith, Ashley County, Ark., and James R. O'Dair, Rapides Parish, La., assignors to Georgia-Pacific Corporation, Portland, Oreg.

Filed Oct. 19, 1979, Ser. No. 86,575
Int. Cl.³ A01G *23/08*
U.S. Cl. 144—34 R **23 Claims**



1. A mobile, self-propelled bush and tree harvester for severing brush and trees above and close to the ground and reducing the severed material to chips, comprising:

a chassis;

drive means carried by said chassis for supporting said chassis on the ground and imparting forward motion thereto;

chipping means carried by said chassis for reducing the severed material to chips;

feeding means carried by said chassis ahead of said chipping means for delivering severed material to said chipping means;

cutting means carried at the front of said chassis ahead of said feeding means for severing brush and trees above and close to the ground as the harvester advances forwardly, and delivering the severed material rearwardly to said feeding means, said cutting means comprising:

a pair of closely spaced, coplanar, side-by-side, substantially circular cutting disks mounted at the front of said chassis below and at least partially ahead of said feeding means for rotation about spaced, substantially vertical axes, said disks having exposed upper surfaces in the area ahead of said feeding means,

cutting disk drive means for counterrotating said disks so that their converging peripheries are moving toward the rear of said chassis, whereby the exposed upper surfaces of said disks propel severed material rearwardly toward said feeding means, and

a plurality of cutting teeth mounted on the periphery of each of said cutting disks for cutting a wide kerf in the brush and trees as the harvester advances forwardly and lifting the severed material; and

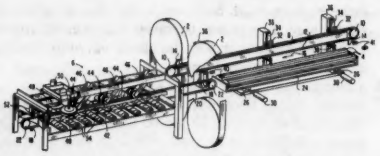
stop means carried by said chassis for maintaining said cutting disks at at least a minimum predetermined height above the ground to prevent contact of said cutting teeth with the ground and any debris on or beneath the ground.

4,338,986

LOG HANDLING METHOD AND APPARATUS

Robert K. Detjen, Eau Claire, Wis., assignor to McDonough Manufacturing Company, Eau Claire, Wis.

Continuation of Ser. No. 956,519, Oct. 31, 1978, Pat. No. 4,206,673, which is a division of Ser. No. 772,152, Feb. 25, 1977, Pat. No. 4,146,072, which is a continuation-in-part of Ser. No. 556,836, Mar. 10, 1975, Pat. No. 4,009,632. This application Jan. 28, 1980, Ser. No. 116,065
The portion of the term of this patent subsequent to Mar. 1, 1994, has been disclaimed.
Int. Cl.³ B27B *15/08, 29/08;* B27C *1/12, 9/00*
U.S. Cl. 144—39 **13 Claims**



1. A sawmill log handling system for advancing logs longitudinally along a given path from an infeed side of a saw, through the saw and to an outfeed side of the saw, said system comprising,

a pusher member for engaging a rearward end of a log,

first carrier means attached to and supporting said pusher member,

rear drive means for moving said first carrier means to advance the pusher member along said given path to carry said log from said infeed side, through the saw and to said outfeed side,

a holdback member for engaging a forward end of said log while said log is being moved by said rear drive means,

second carrier means for supporting one or more of said holdback members for movement from an initial position at the infeed side of the saw to the outfeed side of the saw as said log is cut by the saw,

resistance means for retarding movement of the holdback member as the log is advanced through the saw by the rear drive means, whereby the log is grasped between the driven pusher member and the retarded holdback member, and

forward drive means for moving said second carrier means to bring a holdback member thereon to said initial position after a log is cut by the saw.

4,338,987

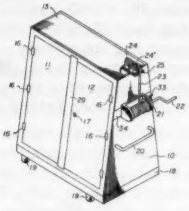
TOOL BOX

Frank N. Miles, 2500 Franklin Blvd., Sacramento, Calif. 95818

Filed Sep. 19, 1979, Ser. No. 77,132
Int. Cl.³ B27H *1/12*
U.S. Cl. 144—285 **5 Claims**

1. A tool chest for storing tools and the like comprising, in combination, an enclosure having a pair of end walls and a pair of side walls defining an interior and an open upper end, a closure pivotally movable into closing relationship with said open upper end, a substantially planar peg board having a front surface and a rear surface for supporting a plurality of tools on both of said surfaces disposed within said enclosure interior intermediate said side walls in a substantially vertical plane, each of said side walls being provided with at least one access

opening for access to said board within said enclosure, a latchable door on each of said side walls closing said at least one access opening, guide means on said enclosure for slidably retaining said board for vertical movement in said vertical plane through said open upper end between a retracted position within said enclosure and an extended position above said open upper end for exposing said board front and rear surfaces to permit access through said at least one access opening in said



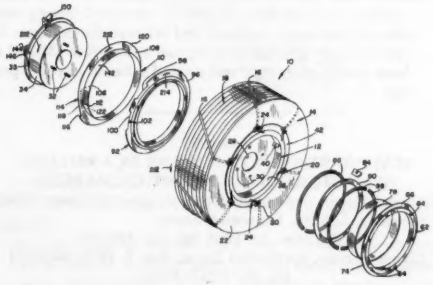
side walls to said plurality of tools supported on said surfaces and means accessible from the exterior of said enclosure for moving said board into a selected vertical position between said retracted position and said extended position wherein said guide means comprises a vertically extending rail mounted on the inner surface of each of said end walls and roller means on each of the side edges of said board for sliding engagement with the respective one of said rails for said sliding movement of said board.

4,338,988

AUTOMATIC TIRE CHAINS

Ralph J. Brooks, 186 S. Clearview Ave., Langhorne, Pa. 19047, and George F. Mannices, 4123 Barnett St., Philadelphia, Pa. 19135

Filed Mar. 3, 1981, Ser. No. 240,208
Int. Cl.³ B60C *27/14*
U.S. Cl. 152—216 **22 Claims**



1. An automatic tire chain for driver operated vehicles that can be moved to the road contact surface of a tire from a position adjacent thereto comprising, in combination:

(a) a wheel, including said tire disposed thereon, suitable for mounting on said vehicle, said wheel being provided with;

(i) first and second rings disposed on the inwardly facing portion of said wheel, said first ring being rigidly affixed to said wheel, said second ring being slidably mounted on said wheel and nested within said rigidly affixed first ring, both said rings being provided with a parallelly disposed lip portion,

(ii) a third ring slidably disposed on the outwardly facing portion of said wheel,

(iii) chain means having one end thereof retained on said inwardly facing slidable second ring, the other end thereof being retained on said outwardly facing slidable third ring and extending over said tire, said chain means having a portion thereof provided with links, said link portion being disposed on the inwardly facing portion of said tire in a first position and being disposed on the road contact surface of said tire in a second position,

(iiii) spring means disposed on said third ring for biasing said chain means and maintaining said chain in said second position, and

(iiiii) means disposed on said rigidly affixed first ring for locking said first and said second rings together in said first position; and

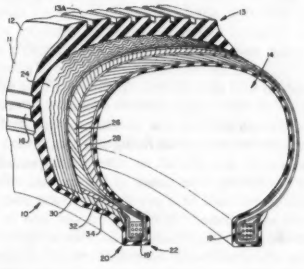
(b) means disposed on said vehicle for engaging said inwardly facing second ring causing said second ring to move relative to said first ring as said wheel rotates moving said chain means from said second position to said first position, said second ring being maintained in said first position by said locking means activating said engaging means again will cause said engaging means to release said locking means and cause said spring means to return said chain means and said second and third rings to said second position.

4,338,989

POLY SPRING TIRES

Lawrence R. Sperberg, 6740 Fiesta Dr., El Paso, Tex. 79912

Continuation of Ser. No. 637,952, Dec. 5, 1975, Continuation-in-part of Ser. No. 567,599, Apr. 14, 1975, abandoned. This application Sep. 12, 1980, Ser. No. 186,707
Claims priority, application France, Apr. 12, 1976, 76 10681; Italy, Apr. 12, 1976, 22327 A/76; United Kingdom, Apr. 12, 1976, 14781/76; South Africa, Oct. 23, 1978, 78/5967; Australia, Oct. 24, 1978, 41012/78; New Zealand, Oct. 25, 1978, 188728; India, Oct. 30, 1978, 1175/78
Int. Cl.³ B60C *9/10*; B29H *17/14*
U.S. Cl. 152—354 RB **22 Claims**



1. A tire construction comprising a tire body of annular configuration and substantially U-shaped cross-section, having a pair of spaced annular edge portions and a tread wearing compound circumferentially extending thereabout; at least one bead embedded along each of said annular edge portions; a ply construction of at least three plies for supporting said tread wearing compound; the improvement comprising:

at least two of said plies are oppositely and equally biased and have the cords thereof extending from a bead on one side to a bead located on the opposed side of the tire; means by which said cords are anchored to said beads, so that the pair of oppositely biased plies are the principal support of said tread wearing compound;

and wherein said oppositely biased plies are the determining factor for establishing the building drum width to be employed for the particular sized tire having a desired inner peripheral dimension;

the third ply being positioned atop and disposed at a greater angle to the equatorial line of the tire than the paired bias plies, said third ply being subjected to linear compression so that the measured length of any individual cord of said

third ply is less than the length of said cord as applied to the building drum and wherein said linear compression imparted by tire shaping is retained essentially unchanged during vulcanization.

4,338,990

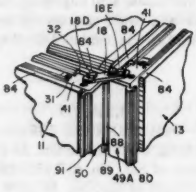
PANEL WALL SYSTEMS WITH MODULAR COMPONENT BUILD-UP

Leif Blodee, Holland; Robert L. Knapp, and Simon W. Oppenhuizen, both of Grand Rapids, all of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Division of Ser. No. 934,729, Aug. 18, 1978, which is a division of Ser. No. 810,578, Jun. 27, 1977, Pat. No. 4,123,879. This application Feb. 7, 1980, Ser. No. 119,625

Int. Cl.³ E06B *9/00*

U.S. Cl. 160—229 R **3 Claims**



1. In a panel wall system, an improved panel connection for first and second panels, each panel including a frame, said connection comprising: first and second connector elements extending the length of each panel and connected to an associated vertical frame member, said connector elements each including a first curved longitudinal edge having an inner concave surface and a second curved longitudinal edge having an outer convex surface conforming to the inner concave surface of said first edge, and said connector elements being placed on adjacent panels in inverted relation, whereby the concave edge surface of one connector element on said first panel encompasses the convex edge surface of another connector element on said second panel defining a first pivot connection, and the convex edge surface of said one connector element is encompassed by the concave edge surface of said another connector element defining a second pivot connection, when said panels are placed in side-by-side parallel arrangement, but permitting one panel to be pivoted relative to the other panel about said first pivot connection away from said side-by-side arrangement in one direction, and to be pivoted relative to the other panel about said second pivot connection away from said side-by-side arrangement in the opposite direction while maintaining connection between the convex curved edge surface and the concave curved edge surface of the one of said pivot connections about which said panel is pivoted to thereby provide a light seal in the joint between said panels.

4,338,991

COMBINED SOLAR HEATING AND PASSIVE COOLING APPARATUS

Harrison W. Sigworth, Jr., 2 Idyll St., Orinda, Calif. 94563

Filed Apr. 28, 1980, Ser. No. 144,661

Int. Cl.³ F25B *29/00*

U.S. Cl. 165—2 **17 Claims**

1. A combined solar heating and passive cooling apparatus (**10**), comprising:

a reservoir (**12**) having walls (**14,16,18,20**), a bottom (**22**) and an open top (**24**);

a liquid (**26,26'**) filling said reservoir (**12**) to a desired liquid level (**28**), said liquid (**28**) having a top surface (**30,30'**);

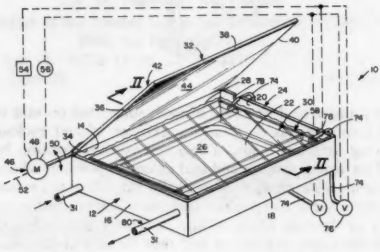
a cover (**32,32'**) having peripheral edges (**34,36,38,40**) and a reflective lower surface (**44**);

cover positioning means (**46,46'**) for selectively positioning said cover (**32,32'**) in either closing relation with said open top (**24**) or in open relation with said open top (**24**) with said lower surface (**44**) aligned generally to reflect sunlight generally towards said liquid (**26**);

a raft (**58,58'**) which when positioned on said top surface (**30,30'**) always covers substantially all of said top surface (**30,30'**) sufficiently to retard substantially all evaporation of said liquid (**26**);

raft moving means (**68,68'**) for selectively moving said raft (**58,58'**) to a location (**70,70'**) in which said top surface (**30,30'**) is substantially entirely exposed to favor direct evaporation of said liquid (**26,26'**) out of said reservoir (**12**) and into the surrounding atmosphere;

wherein said cover positioning means (**46,46'**) operates in response to ambient temperature and to time of day to place said cover (**32,32'**), when ambient daytime temperature as measured during a selected time span is below a selected temperature, in said open relation during a first selected daytime period and in said closed relation during other than said first selected daytime period and to place said cover (**32,32'**), when ambient temperature as measured during said selected time span is above said selected temperature, in closed relation during a selected daytime period and in said open relation during other than said second selected daytime period; and



wherein said raft moving means (**68,68'**) operates, when ambient daytime temperature as measured during said selected time span is above said selected temperature, to remove said raft (**68,68'**) from said top surface (**30,30'**) at least during other than said second selected daytime period.

4,338,992

SEALING STRUCTURE FOR USE IN A ROTARY, HEAT-REGENERATIVE HEAT EXCHANGER

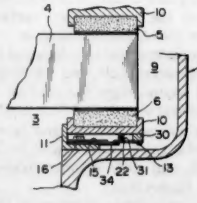
Noritoshi Handa, Yokosuka, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Mar. 28, 1980, Ser. No. 134,899

Claims priority, application Japan, Apr. 3, 1979, 54-39331

Int. Cl.³ F28D *19/00*

U.S. Cl. 165—9 **7 Claims**



4. In a rotary heat exchanger comprising a housing and a heat regenerator which is formed as a cylinder rotatable about its axis and which intersects a first and a second passage formed

in said housing, said passages being adapted to conduct two fluids, the fluid in the first passage being at substantially higher pressure than the fluid in the second passage;

a sealing structure for sealing between the regenerator and an end of the second passage which opposes the regenerator, comprising:

a cold side seal element extending around the periphery of said opposing end, with a face in contact with the regenerator;

a circular seal holder attached to the cold side seal element;

a first circular spring member fixed at the outer edge thereof to the seal holder;

a second circular spring member coupled at the inner edge thereof to the housing;

the inner free circular edge of the first circular spring member being in abutting contact with the outer free circular edge of the second circular spring member;

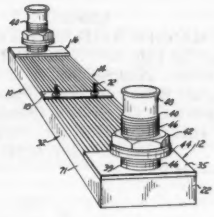
the first passage communicating with the space on the other side of the combination of the first and second spring members from the regenerator.

4,338,993

UNDERWATER OUTBOARD MARINE HEAT EXCHANGER

Paul W. Fernstrum, Menominee, Mich., assignor to R. W. Fernstrum & Co., Menominee, Mich.

Filed Feb. 22, 1980, Ser. No. 123,888
Int. Cl.³ B60H *1/04;* F28D *7/02*
U.S. Cl. 165—44 **1 Claim**



1. An underwater outboard marine heat exchanger for attachment to the outside of a hull of a water going vessel which comprises:

(a) a plurality of component tubes having a rectangular cross-section wherein each of said tubes has a broader wall at least three times the width of its narrower wall, said tubes being stacked vertically in multiples of two or more with the narrower walls adjacent and welded to each other, a multiplicity of said stacked tubes being arranged in parallel relation and spaced from each other to provide longitudinal passages between the components for contact with and flow of water in which a vessel is supported,

(b) a header at each end of said tubes comprising cross plates fastened to said tubes to form a manifold chamber open to each of said parallel component tubes and to space said tubes laterally, and

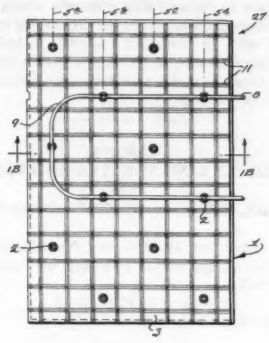
(c) a connector fitting rising from each said header in communication with said manifold chamber having a threaded exterior to serve to mechanically fasten said headers to a vessel hull and provide liquid connectors for water flow from within the vessel to said headers and the interior of said component tubes.

4,338,994

MODULAR PANEL HEATER HAVING IMPROVED HOLDER DEVICES

Bernd Hewing, Hellstiege 1o, and Franz-Josef Hagemann, Eichendorffweg 8, both of 4434 Ochtrup, Fed. Rep. of Germany

Filed Jan. 28, 1980, Ser. No. 115,663
Int. Cl.³ F24D *19/02*
U.S. Cl. 165—49 **24 Claims**



1. A modular panel heater, comprising:

a panel fabricated from a polystyrene foam material that is thermally insulative and/or sound attenuating;

a heating element attached to the panel; and

a plurality of retaining members for attaching the heating element in a predetermined position with respect to the panel, the retaining members and panel being formed such that the retaining members are attachable and detachable at a plurality of locations, each retaining member including:

a base portion; and

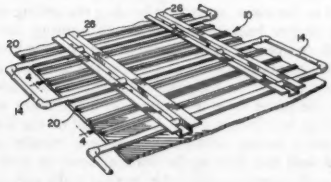
a plurality of finger members extending from the base portion and distributed about said base portion in an axially symmetrical manner, the finger members curving toward one another in a direction away from the base portion so as to form pockets for press-fit retaining the heating element.

4,338,995

RADIANT HEATING AND COOLING PANEL AND METHOD OF MANUFACTURING

William Shelley, 456 W. Frontage Rd., Northfield, Ill. 60093

Filed Nov. 13, 1980, Ser. No. 206,555
Int. Cl.³ F24D *19/00;* F28F *1/22*
U.S. Cl. 165—49 **6 Claims**



1. Radiant panel for absorbing and emitting heat the improvement comprising:

an extruded sheet having a front surface and a back;

a copper tube having a circular cross section;

said sheet back having extruded, upstanding saddles means having a semi-circular, concave shape adapted to receive said copper tube;

said copper tube having a hollow core and being constructed to carry a heat conducting fluid;

said sheet back having extruded channels forming trough-shaped members with upstanding legs on each side of the saddle means;

a crossbrace extending transversely of the extruded saddles and having cutout portions extending about the copper tube;

fastener means located on the crossbrace and connecting the crossbrace to the extruded channels whereby tightening of the fastener means urges the crossbrace into restraining contact with the extruded channels to hold the legs of each channel in a plane thereby orienting the front surface of the panel in a plane to provide a smooth appearing, continuous surface.

4,338,996

COMBINED ROLLING SHUTTER AND VENTILATING BOX

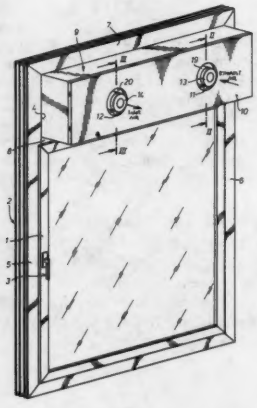
Wilhelm Frank, Rohrer Str. 120, 7022 Leinfelden, Fed. Rep. of Germany

Filed Jun. 19, 1980, Ser. No. 161,652

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1979, 7917750[U]

Int. Cl.³ F28D *7/12*

U.S. Cl. 165—57 **1 Claim**



1. A combined rolling shutter and ventilating box arrangement mounted on a window frame defining a plane dividing an interior room from the atmosphere, which comprises a ventilating box mounted on the window frame and having a vertical cover facing the interior room, an outer wall facing the atmosphere and a horizontal wall interconnecting the cover and the outer wall, the vertical cover and the outer wall extending parallel to the plane, a housing holding the rolling shutter, the rolling shutter being arranged in the housing for unreeling through an opening in the housing, the opening communicating with the atmosphere and guiding the unreeled shutter for extension parallel to the plane whereby the unreeled shutter shields the plane from the atmosphere, the outer wall of the ventilating box forming one vertical wall of the housing and the housing having another vertical wall parallel to the one vertical wall and close to the vertical cover as well as a horizontal wall interconnecting the vertical walls and close to the horizontal wall of the ventilating box, the horizontal walls defining an air duct section above the housing and the vertical cover and other vertical wall defining another duct section communication with the air duct section and extending perpendicularly thereto, the duct sections being divided into a first duct section part for receiving warm air to be exhausted from the interior room and a second duct section part for receiving fresh air from the atmosphere, the cover defining a first opening in communication with the first duct section part, a ventilator in the first opening for exhausting the warm air from the interior room, the ventilator forcing the exhausted warm air through the first duct section part in a path having a vertical component in the other duct section and a horizontal component in the air duct section, diversion of the exhausted warm air from the vertical to the horizontal path component causing turbulence therein, venting means in the box at the end of the path for venting the exhausted warm air to the atmosphere, a fresh air inlet in the horizontal wall of the housing in substantially vertical alignment with the opening in the housing, the housing defining a vertical fresh air inlet channel between the opening and the air inlet, the air inlet being in communication with the second duct section whereby fresh air is received from the fresh air inlet channel in the second duct section part, diversion of the fresh air from the vertical fresh air inlet channel to the horizontal second duct section part causing turbulence therein, the cover defining a second opening in communication with the second duct section part, a ventilator in the second opening for drawing the fresh air from the atmosphere through the air inlet channel and the second duct section part, and a heat exchanger in the air duct section, the heat exchanger being comprised of a series of heat exchange tubes extending transversely to the air flow through the first and second duct section parts, the heat exchange tubes being staggered in relation to each other and the fresh air and exhausted warm air flowing in turbulent condition over the staggered tubes.

4,338,997

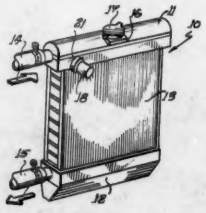
HEAT EXCHANGER WITH BILAYERED METAL END CONTAINER FOR ANTICORROSIVE ADDITION

Robert H. Krueger, Palatine; John L. Zambrow, Lincolnshire, both of Ill., and Brian E. Cheadle, Bramalea, Canada, assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 5, 1981, Ser. No. 222,456

Int. Cl.³ F28F *19/00*

U.S. Cl. 165—134 R **8 Claims**



1. A heat exchanger in combination with a container for the automatic addition of a corrosion inhibitor into a circulating fluid system for a heat exchanger subject to corrosion, including a container housing the corrosion inhibitor with a membrane for one end of said container which is in contact with the circulating fluid, said container end comprising a bimetallic membrane having a base metal layer which will corrode when exposed to the circulating fluid in a corrosive condition but will not corrode when the fluid contains a desired concentration of corrosion inhibitor, and a thin film of a second metal comprising titanium formed on the exterior surface of the base layer and exposed to said fluid protecting the base metal when the corrosive condition occurs.

4,338,998
LOW PROFILE HEAT EXCHANGER AND METHOD OF MAKING THE SAME

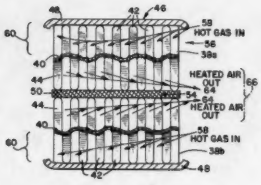
Alexander Goloff, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/00857, § 371 Date Jul. 7, 1980, § 102(e) Date Jul. 7, 1980, PCT Pub. No. WO82/00194, PCT Pub. Date Jan. 21, 1982

PCT Filed Jul. 7, 1980, Ser. No. 250,749

Int. Cl.³ F28F *9/22, 3/00;* F28D *9/00*

U.S. Cl. 165—165 **25 Claims**



1. A primary surface heat exchanger (46) comprising:

(a) at least one heat exchange core (38*a*) formed from a unitary strip of heat conducting material pleated to define a plurality of sequential sections (22,24) of substantially equal size, adjacent sections (22,24) forming two sidewalls joined at one edge to define a plurality of sequentially arranged, substantially parallel, open ended fluid passages (58,64) extending therethrough, each said fluid passage (58,64) opening along one side of said heat exchange core (38*a*) in a direction opposite to that of the next adjacent fluid passages on either side thereof, one side of each open end of every other one of said fluid passages being closed (44) to form a first group of fluid passages (58) having adjacent aligned closed portions (44) and open portions (43) at either end thereof, the remaining fluid passages (64) intermediate said first group of fluid passages (58) having one side of each open end thereof closed (42) to provide adjacent aligned closed (42) and open portions (45) at the ends thereof, the open portions (43) of said first group of fluid passages (58) being adjacent and intermediate the closed portions (42) of said second group of fluid passages (64), said sections (22,24) being formed to provide undulations in the sidewalls formed thereby extending between the ends of said fluid passages (58,64),

(b) first fluid inlet means (56) extending across the open portions (43) of said first group of fluid passages (58) and the closed portions (42) of said second group of fluid passages (64) at a first end of said heat exchange core (38*a*),

(c) first fluid outlet means (60) positioned at a second end of said heat exchange core (38*a*) opposite to said first fluid inlet means (56) and extending across the open portions (43) of said first group of fluid passages (58) and the closed portions (42) of said second group of fluid passages (64) at said second end, said first fluid inlet and outlet means (56,60) communicating with said first group of fluid passages (58),

(d) second fluid inlet means (62) extending across the open portions (45) of said second group of fluid passages (64) and the closed portions (44) of said first group of fluid passages (58) at said second end of said heat exchanger core (38*a*),

(e) second fluid outlet means (66) positioned at the first end of said heat exchanger core (38*a*) opposite to said second fluid inlet means (62) and extending across the open portions (45) of said second group of fluid passages (64) and the closed portions (44) of said first group of fluid passages (58), said second inlet and outlet means (62,66) communicating with said second group of fluid passages (64); and

(f) a strip (40) attached to said sequential sections (22,24) extending across at least one end of said heat exchange core (38*a*) between the closed and open sides (42,43,44,45) of said fluid passages (58,64), said strip (40) being corrugated to provide flexibility lengthwise thereof.

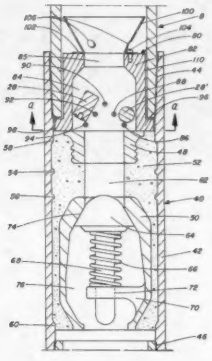
4,338,999
KNOCKOUT PIN TRAP

Ernest E. Carter, Jr., Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Feb. 19, 1980, Ser. No. 122,109

Int. Cl.³ E21B *31/08*

U.S. Cl. 166—117 **23 Claims**



1. An apparatus for stopping the movement of solid objects therethrough, comprising:

a body having a bore therethrough;

baffle means across said bore, said baffle means adapted to permit fluid flow therethrough and to stop the movement of solid objects greater than a predetermined size; and

guide means leading to said bore and adapted to direct solid objects therein, said guide means being collapsible against said body.

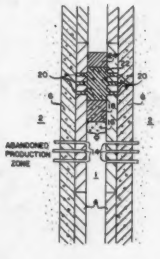
4,339,000
METHOD AND APPARATUS FOR A BRIDGE PLUG ANCHOR ASSEMBLY FOR A SUBSURFACE WELL

Clifford P. Cronmiller, 8398 Leeward Dr., Huntington Beach, Calif. 92646

Filed Aug. 28, 1980, Ser. No. 182,289

Int. Cl.³ E21B *33/134, 43/112*

U.S. Cl. 166—295 **14 Claims**



1. A method for anchoring a bridge plug within a casing of a subsurface well, said method comprising the steps of:

forming a plurality of perforations through the wall of said casing at a location above the bridge plug,

depositing a first supply of cement over the bridge plug for

filling a portion of said casing corresponding to that through which the perforations are formed,

positioning a mass over said first supply of cement and applying pressure to said mass for compressing the cement of said first supply against the bridge plug and for forcing some of said cement through the perforations in said casing, and

curing said cement for providing a footing for anchoring the bridge plug within said casing.

6. Apparatus to anchor a bridge plug within a casing of a subsurface well to reliably plug the well, said apparatus comprising:

a resilient strip positioned in said casing at a location above the bridge plug, and

at least one barb attached to said strip, said barb having a housing in which an explosive charge is stored, said barb adapted to be driven through a wall of said casing and into locking engagement therewith when said charge is detonated.

4,339,001

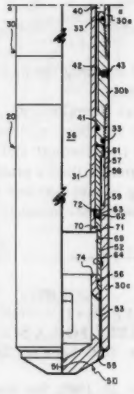
SAFETY VALVE

James H. Paschal, Jr., Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 14, 1980, Ser. No. 196,447

Int. Cl.³ E21B *33/00*

U.S. Cl. 166—322 **16 Claims**



9. A safety valve for installation within a well flow conductor comprising:

a. a housing means;

b. means for locking the safety valve within the well flow conductor;

c. a longitudinal flow passageway extending through the housing means;

d. an actuator sleeve slidably disposed within the housing means and partially defining the longitudinal flow passageway;

e. an annulus formed between the exterior of the actuator sleeve and the interior of the housing means;

f. piston means slidably disposed within the annulus and attached to one end of the actuator sleeve;

g. seal means carried by the housing means and engaging the exterior of the sleeve spaced longitudinally from the piston means;

h. a variable volume gas chamber, formed within the annulus between the piston means and seal means, biasing the actuator sleeve to slide longitudinally in one direction with respect to the housing means when fluid pressure within the chamber is higher than fluid pressure in the longitudinal flow passageway;

i. a valve closure means at least partially disposed within the housing means having a first position allowing fluid flow through the longitudinal flow passageway and a second position blocking fluid flow through the longitudinal flow passageway; and

j. means for latching the valve closure means in its first position to the housing means until fluid pressure within the chamber exceeds fluid pressure within the longitudinal passageway by a preselected value.

4,339,002

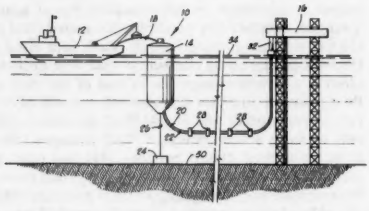
SEA BUOY DISCHARGE MANIFOLD SYSTEM

Max A. Gibbs, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Aug. 9, 1979, Ser. No. 65,164

Int. Cl.³ E21B *43/013*

U.S. Cl. 166—355 **31 Claims**



1. A discharge manifold system for connecting a pressurized fluid discharge from a floating vessel to an offshore well, comprising:

a floating buoy;

a manifold means, supported by said buoy, said manifold means including an inlet and first and second outlets, each of said outlets being in fluid communication with said inlet;

fluid conducting swivel means connected to said inlet;

flexible discharge conduit means having a first end connected to said pressurized fluid discharge from said floating vessel;

connecting means for connecting a second end of said flexible discharge conduit means to said fluid conducting swivel means, so that said discharge conduit means may pivot about said manifold means;

first and second valve means connected to said first and second outlets, respectively; and

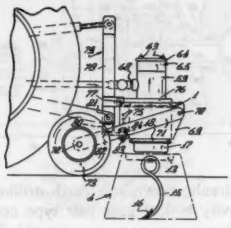
first and second flexible intermediate conduits, extending laterally through a body of water from said floating buoy to said offshore well, and having first ends connected to said first and second valve means, respectively, and having second ends connected to said offshore well, so that pressurized fluid for treating said well can flow through said discharge conduit means, then through said fluid conducting swivel means, then through said manifold means, then through said first and second valve means and said first and second intermediate conduits to said well, said first and second valve means and first and second intermediate conduits comprising a means for providing selectable redundant fluid communication between said manifold means and said offshore well.

4,339,003

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Division of Ser. No. 864,471, Dec. 27, 1977, Pat. No. 4,187,915.
This application May 24, 1979, Ser. No. 42,154
Claims priority, application Netherlands, Dec. 29, 1978, 7614518
Int. Cl.[3] A01B 33/06
U.S. Cl. 172—47 9 Claims



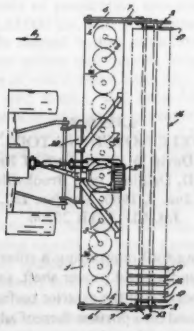
1. A soil working implement, comprising a frame and a plurality of soil working members rotatably supported on said frame, driving means connected to rotate said members and said members being journalled in an elongated portion of said frame that extends transverse to the direction of implement travel, at least two supports connected to the upper part of said frame portion, said supports being pivotally connected to an upwardly extending coupling member by pin means, a lower shear pin coupling interconnecting said frame portion to said coupling member, said frame portion being pivotable rearwardly relative to said coupling member about a substantially horizontal axis defined by said pin means upon overload on said pin, said shear pin being located substantially directly below said horizontal axis and about midway between said supports when viewed in plan.

4,339,004

SOIL COMPACTING ROLLERS

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Maasland, Netherlands

Filed Apr. 17, 1980, Ser. No. 141,062
Claims priority, application Netherlands, May 8, 1979, 7903571
Int. Cl.[3] A01B 29/04
U.S. Cl. 172—537 17 Claims



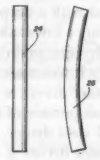
1. A soil compacting roller comprising a plurality of rings that are rotatable about a substantially horizontal axis, said rings being positioned in side-by-side relationship and being independently movable with respect to each other during operation, a carrier with bearing means supporting said rings, said bearing means including an upper fixed supporting member and a lower cylinder, said supporting member and said cylinder being spaced apart a substantial distance from one another and extending through the openings in said rings, the openings in said rings being generally in alignment and said supporting member being located at a higher level than said cylinder, said horizontal axis being located between the supporting member and said cylinder, said carrier including an elongated support that extends above and along the length of the roller, a plurality of guide members depending from said elongated support and said rings being separated by said guide members, said guide members extending between said supporting member and said cylinder to terminate in lower free ends.

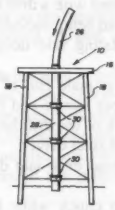
4,339,005

CURVED WELL CONDUCTORS FOR OFFSHORE PLATFORM

Frank J. Schuh, Dallas, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 10, 1980, Ser. No. 167,544
Int. Cl.[3] E21B 7/08
U.S. Cl. 175—9 16 Claims





1. A method of installing a solid walled curved well conductor on an offshore platform located above a body of water, comprising the steps of:

providing a staight guide sleeve on the offshore platform;

forming a predetermined curvature being greater than the inside diameter of the straight guide sleeve in the lowermost portion of said well conductor with the remaining portion thereof being substantially straight;

releasably straightening the lowermost portion of said well conductor without yielding the material thereof;

lowering said straightened well conductor through the straight guide sleeve downward from the offshore platform into contact with the floor of the body of water;

releasing the lowermost portion of said well conductor upon exiting the straight guide sleeve such that the lowermost portion resumes substantially its original curvature; and

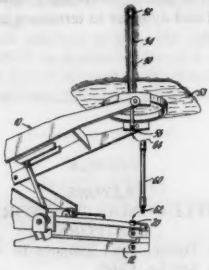
advancing said well conductor into the floor of the body of water downwardly and outwardly along a curved path established by the lowermost portion of said well conductor.

4,339,006

METHOD AND APPARATUS FOR MINE ROOF DRILLING

Arnold B. Bower, Jr., and Randall W. Ojanen, both of Bristol, Va., assignors to General Electric Company, Detroit, Mich.

Continuation of Ser. No. 100,214, Dec. 4, 1979, abandoned. This application May 1, 1981, Ser. No. 259,500
Int. Cl.[3] E21C *1/00*; E21B *17/04*
U.S. Cl. 175—57 14 Claims



5. A method of drilling a bolt hole in a mine roof utilizing a roof bolting drill provided with a deep chuck having an upper female end, a drill bit having a lower shank portion, and at least two identical drill steel drivers, said drill steel drivers having an upper female end and a lower male end, wherein the upper female end of the drill steel driver is capable of engagement with either the lower shank portion of the drill bit or the lower male end of another drill steel driver, and wherein the lower male end of each drill steel driver is capable of engagement with either the upper female end of said deep chuck or the upper female end of another drill steel driver, said roof bolting drill being further provided with a drill head connected to said deep chuck, said drill head being movable in the vertical direction and capable of rotating said deep chuck, said method comprising the steps of:

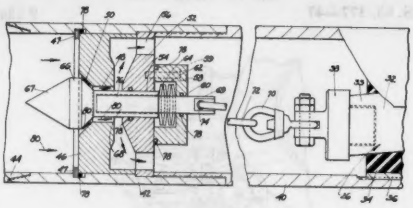
(a) mounting the lower male end of one of said drill steel drivers into the upper female end of said deep chuck;
(b) mounting the shank of the drill bit into the upper female end of said one drill steel driver;
(c) raising said drill head until said drill bit abuts the mine roof;
(d) rotating said deep chuck while simultaneously raising said drill head such that said drill bit bores into said roof creating a bolt hole and continuing said rotating and raising until said one drill steel driver is at least partially disposed within said bolt hole;
(e) disconnecting said one drill steel driver from said deep chuck;
(f) lowering said drill head while said one drill steel driver and said drill bit is maintained in the hole;
(g) mounting the lower male end of another drill steel driver into the female end of said deep chuck;
(h) raising said drill head until the upper female end of said another drill steel driver abuts the bottom male end of said one drill steel driver;
(i) connecting the upper female end of said another drill steel driver to the lower male end of said one drill steel driver;
(j) rotating said deep chuck while simultaneously raising said drill head such that said drill bit bores further into said roof; and
(k) lowering said drill head with said drill steel drivers and said drill bit connected thereto from said bolt hole while being rotated.

4,339,007

PROGRESSING CAVITY MOTOR GOVERNING SYSTEM

Wallace Clark, Indianapolis, Ind., assignor to Oncor Corporation, Houston, Tex.

Filed Jul. 25, 1980, Ser. No. 172,128
Int. Cl.[3] E21B *3/12*
U.S. Cl. 175—107 20 Claims



1. In an hydraulic down-hole earth drilling motor of the progressive cavity helical gear pair type constituted by an inner member having one or more external helical threads and a cooperating outer member having one or more internal helical threads, the number of helical threads on the inner and outer members differing by one, said outer member having an outer member housing into which hydraulic fluid is pumped down from the surface to drive said motor, a control system to control the pressure drop of the fluid flowing through said motor so that it does not become excessive, comprising a valve housing defining a chamber, one end of said valve housing being secured to said outer member housing of said motor; valve means positioned within said valve housing chamber to control the flow of fluid through said valve housing, said valve means being movable from an open to a closed position; pressure controlling means positioned within said valve housing chamber to normally bias said valve means toward the open position; and linkage means positioned within said valve housing chamber and joining said valve means and the upper end of said inner member, whereby axial displacement of said inner member acts to operate said valve means to control the fluid flow and therefore the pressure drop through said motor in order to protect said motor from overload.

4,339,008

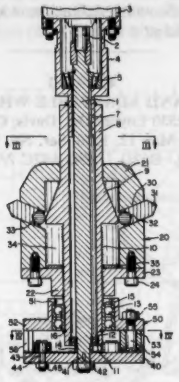
WELL NOTCHING TOOL

Azel R. Ford, and David W. Ford, both of Brookville, Pa., assignors to D. B. D. Drilling, Inc., Brookville, Pa.

Filed Jun. 9, 1980, Ser. No. 157,386
Int. Cl.[3] E21B *29/06*
U.S. Cl. 175—272 11 Claims

1. A notch cutting tool comprising a rotary power shaft, a coaxial shell surrounding said power shaft, said shell having a taper formed on a portion of the exterior surface thereof and an exterior thread formed on a portion thereof adjacent said taper, a bell housing coaxial with and surrounding a portion of said shell including said taper, said bell housing having a base with an internal thread, said internal thread mating with the exterior thread on said shell, said bell housing having a bell portion formed with a plurality of angular passageways, a slip slidably carried in each of said passageways, and cutting means at the

lower end of said rotary power shaft for cutting a notch in the sidewall of a hole, said slips contacting said shell taper



whereby axial movement of said bell housing relative to said shell causes said slips to slide in said passageways.

4,339,009

BUTTON ASSEMBLY FOR ROTARY ROCK CUTTERS

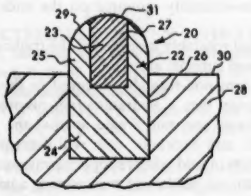
Donald W. Busby, 5060 Nome St., Denver, Colo. 80239

Filed Dec. 27, 1979, Ser. No. 107,569

Claims priority, application South Africa, Mar. 27, 1979, 79/1451

Int. Cl.³ E21B *10/52*

U.S. Cl. 175—374 **1 Claim**



1. A non-replaceable and non-percussion button assembly fixedly secured into the matrix of a cutting tool, said cutting tool being capable of penetrating subterranean strata at load pressures up to 55,000 psi, said button assembly comprising:

a cylindrically shaped button press-fittingly inserted into a formed bore within said matrix, fully engaging the sides and bottom of said formed bore, and extending above the surface of said matrix, said press-fitting insertion being sufficient to hold said button in said matrix under said load pressures, said button being molded from a non-machinable steel material having (1) a substantial hardness between **50** to **55** RC, (2) a transverse rupture strength greater than the transverse rupture strength of tungsten carbide, and (3) an abrasion resistance less than the abrasion resistance of tungsten carbide, the aforesaid steel material being capable of being ground,

a cylindrically molded tungsten carbide insert being press-fittingly inserted into a centrally formed cylindrical bore within said button, and to fully engage the sides and bottom of the aforesaid bore, the aforesaid press-fitting insertion being sufficient to hold said insert in said button under said load pressures, the sides of said insert being parallel to the sides of said button and the cross-sectional area of said button being at least equal to the cross-sectional area of said insert, the length of said insert being at least equal to the diameter of said insert and less than the length of said button, substantially the entire length of said insert in the aforesaid formed bore extending above the surface of said matrix, and

said button being capable of cutting said strata at load pressures up to 55,000 psi when said insert wears down toward said button and being capable of providing transverse longitudinal support to said insert as said button and insert wear down wherein said button and said insert wear down from cutting said rock at a substantially equal rate.

4,339,010

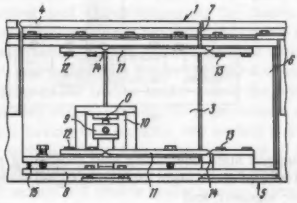
APPARATUS FOR WEIGHING TRANSPORT VEHICLES IN MOTION

Georgy F. Malikov, Khlebozavodskoi proezd, 8, korpus 1, kv. 56; Vladimir A. Chukhno, 3 Paveletsky proezd, 7, kv. 45; Leonid K. Timofeev, 2 ulitsa Bebelya, 26, kv. 152, all of Moscow, U.S.S.R.; Khakim N. Ibragimov, deceased, late of Moscow, U.S.S.R., and by Maria F. Ibragimova, administrator, Svobodny prospekt, 5/2, kv. 134, Moscow, U.S.S.R.

Filed Jan. 2, 1981, Ser. No. 221,995

Int. Cl.³ G01G *19/02, 3/08, 21/24*

U.S. Cl. 177—134 **3 Claims**



1. An apparatus for weighing transport vehicles in motion, wherein at least two measuring units are electrically connected with a recording unit, each including:

a supporting structure;

a load cell mounted on said supporting structure;

a load platform bearing on said load cell at a supporting point;

four horizontal rods installed in pairs at two sides of the load platform, directed to one end thereof and secured at one end on said supporting structure and at the other end of the side surfaces of said load platform in immediate proximity to the geometric line which is a projection of the vertical line through the supporting point of said load platform;

said rods featuring rigidity which is substantially greater in a horizontal direction than in a vertical direction;

said rods being connected with said supporting structure and said load platform in such a manner as to form, in conjunction therewith, an elastic parallelogram;

said load platform bearing on said load cell at a geometric point whose vertical displacement due to an arbitrary moment of forces acting upon the load platform and causing elastic deformation of the rods is equal to zero.

4,339,011

NON-DEFLECTION PRESSURE SWITCH APPARATUS

Alfred W. DiMarzio, Bethany, Conn., assignor to General Electric Company, New York, N.Y.

Filed Nov. 24, 1980, Ser. No. 209,750

Int. Cl.³ G01G *23/18*

U.S. Cl. 177—177 **8 Claims**

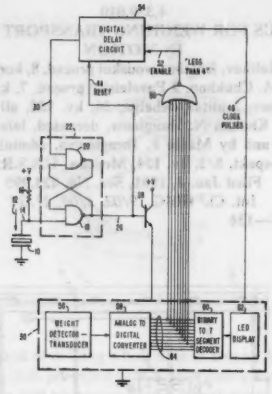
1. In an electronic digital weighing scale, apparatus comprising:

an electrically energized weight indicating means including means providing a plurality of distinct signals indicating in

combination the magnitude of a weight applied to the scale,

a piezoelectric element positioned and arranged to receive a mechanical pressure signal and to generate in response thereto a weight indicating voltage signal when a weight is initially applied to the scale,

a two-state circuit means having input means coupled to said piezoelectric element and output means coupled to said indicating means, the output of said two-state circuit operable from a first state deenergizing said indicating means



to a second state energizing said indicating means upon initial receipt of a weight indicating signal from said piezoelectric element, and

a time delay circuit coupled to said two-state circuit and said indicating means for causing said two-state circuit to switch from said second state to said first state after a predetermined delay period, said time delay circuit being responsive to said distinct signals of said indicating means such that the delay period runs only when said distinct signals indicate that the applied weight is less than a predetermined level greater than zero.

4,339,012

BABY SCALE

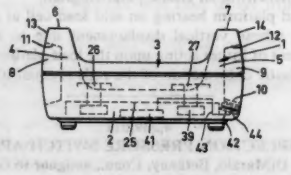
Sönke Vogel, Hamburg, and Frohmut Müller, Barsbüttel, both of Fed. Rep. of Germany, assignors to Vogel & Halke, Hamburg, Fed. Rep. of Germany

Filed Jan. 8, 1981, Ser. No. 223,419

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1980, 8001469[U]

Int. Cl.³ G01G *21/22*

U.S. Cl. 177—262 **10 Claims**



1. In a baby scale comprising a base, a housing which is mounted on said base and formed with an open-topped depression adapted to receive a baby to be weighed, and weighing means responsive to a weight applied to said housing,

the improvement residing in that said housing has two side walls, which define said depression on opposite sides thereof and each of which has at its top a continuous grip flange and is formed under said grip flange with an opening which together with said grip flange constitutes a carrying handle and is defined by a sparlike grip portion formed by said grip flange.

4,339,013

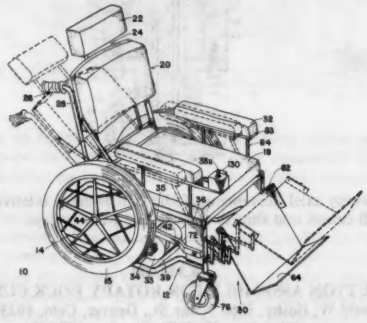
MOBILE AND ADAPTABLE WHEEL CHAIR

Gerald I. Weigt, 2530 Loyola Dr., Davis, Calif. 95616

Filed May 12, 1980, Ser. No. 148,793

Int. Cl.³ B62D *11/04*; A47C *7/50, 1/02*

U.S. Cl. 180—6.5 **15 Claims**



1. A wheel chair comprising:

a frame;

a transverse torsion bar rotatably mounted near its ends on the forward portion of said frame;

a pair of rearwardly extending, elongated wheel support arms non-rotatably mounted on the ends of said torsion bar;

a rear wheel rotatably mounted at the trailing end of each of said wheel support arms;

a control arm non-rotatably secured to the mid-portion of said torsion bar; a hydraulic ram pivoted between said control arm and said frame so that the position of the piston in said hydraulic ram will determine the angular disposition of said wheel support arms, and said hydraulic ram when set holds said mid-portion against rotation, so that torsion at one end of said torsion bar is not transmitted to the other end thereof; and

at least one front wheel rotatably mounted at the forward end of said frame.

4,339,014

AIR COOLING SYSTEM FOR DRIVE ENGINE OF AN AUTOMOTIVE AGRICULTURAL MACHINE

Dieter Berth; Gottfried Hohlfeld, both of Neustadt in Sachsen; Klaus Oliva, Langburkersdorf, and Christian Noack, Guttau, all of German Democratic Rep., assignors to VEB Kombinat Fortschritt Landmaschinen Neustadt in Sachsen, Neustadt in Sachsen, German Democratic Rep.

Filed Dec. 14, 1979, Ser. No. 103,424

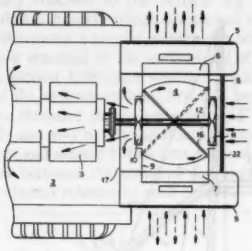
Claims priority, application German Democratic Rep., Dec. 27, 1978, 210144

Int. Cl.³ B60K *11/08*

U.S. Cl. 180—54 A **1 Claim**

1. An air cooling system for the drive engine of an automotive agricultural machine with spaced-apart radiators, an exhaust system and an air compartment having side walls and end walls characterized in that two fans (10, 11) are mounted on a common drive shaft (12) behind a drive motor (3) one of said fans located in each end wall of the air compartment (4), each side wall being formed by one of said radiators (6, 7), a pivotal air-deflection plate (16) mounted between the fans (10, 11) so as

to always be diagonal to the radiators, and the air compartment being divided into two subcompartments, the walls of each subcompartment always formed by one radiator (6, 7), one fan (10, 11) and the air-deflection plate (16), and between the drive engine (3) and the fans (10, 11) there is a partition (17) extend-



ing down from an upper machine wall (18) to the common drive shaft (12) and to both sides of the partition (17) there are openings (19, 20) in the upper machine wall (18) and between the air compartment (4) and the upper machine wall (18) there is the exhaust system (21) of the drive engine (3).

4,339,015

ELECTRICALLY DRIVEN VEHICLES

Ronald Fowkes, Solihull, and Geoffrey G. Harding, Allostock, near Knutsford, both of England, assignors to Lucas Industries Limited, Birmingham, England

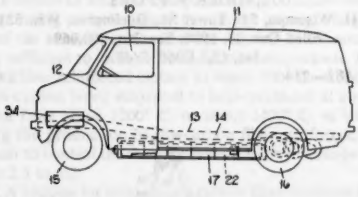
PCT No. PCT/GB79/00031, § 371 Date Oct. 16, 1979, § 102(e) Date Oct. 1, 1979, PCT Pub. No. WO79/00630, PCT Pub. Date Sep. 6, 1979

PCT Filed Feb. 13, 1979, Ser. No. 165,486

Claims priority, application United Kingdom, Feb. 16, 1978, 6121/78

Int. Cl.³ B60L *11/12*

U.S. Cl. 180—65 R 6 Claims



1. In an electrically driven motor vehicle including an electric motor 31 arranged to drive the vehicle through a transmission system 29,33, a battery pack 22 arranged to provide power for driving the electric motor 31, and a charging unit 25,26 for charging the battery pack 22, said charging unit including a prime mover 26, the improvement wherein the battery pack 22 and charging unit 25,26 are mounted on a common structure 17 carried directly on the vehicle chassis and detachably secured thereto by releasable fasteners 18,19,21 whereby the assembly comprising said battery pack, charging unit and common structure is detachable as a complete unit from the vehicle.

4,339,016

TILTABLE FENDER FOR A TRACTOR LOADER

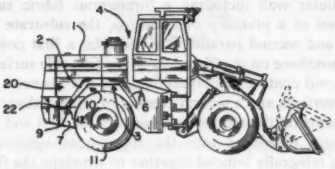
Jost Gerresheim, Libertyville, Ill., assignor to International Harvester Co., Chicago, Ill.

Continuation-in-part of Ser. No. 1,972, Jan. 8, 1979, abandoned. This application Oct. 14, 1980, Ser. No. 196,248

Claims priority, application Fed. Rep. of Germany, Jan. 13, 1978, 7800896[U]; France, Jan. 10, 1979, 79 00528; Canada, Feb. 9, 1979, 321182

Int. Cl.³ B62D *25/16*

U.S. Cl. 180—89.17 7 Claims



1. A rubber tired tractor loader having a chassis, an engine compartment supported on the chassis, a plurality of ground engaging rubber tired wheels supporting the chassis, an engine compartment enclosing means hinged to the chassis and covering the compartment, at least one rubber tired wheel each of the plurality and including a fender therefor located at opposite lateral sides of the tractor loader below the compartment and the enclosing means, wherein the improvement comprises:

the fenders having two sections, one section is a stationary fender section mounted to respective sides of the chassis and is longitudinally spaced from the enclosing means, the second section is a tiltable fender section extending longitudinally from the stationary fender section below and spanning a substantial portion of the enclosing means;

means for locking the two fender sections together;

supporting means for tiltably mounting each second fender section to the respective sides of the chassis and including a supporting strut having an upward end connected to a downward skirt portion of the second fender section and having a downward end connected to an outboard end of the supporting means, the supporting means including inboard end means for permitting laterally downwardly tilting of the supporting strut and connected second fender section upon unlocking of the two fender sections for gaining access to the enclosing means and to the compartment after moving the enclosing means and uncovering the compartment.

4,339,017

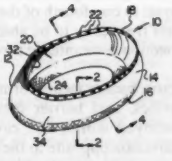
AIR CUSHION VEHICLE SKIRT MATERIAL AND METHOD

Carson R. Payne, 12 Yeomans Way, Markham, Ontario, Canada (L3P 3X2)

Filed Sep. 25, 1978, Ser. No. 945,605

Int. Cl.³ B60V *1/16*

U.S. Cl. 180—127 16 Claims



1. A molded skirt for an air cushion vehicle or the like

having a platform defining a support air outlet, the skirt comprising:

a continuous annular wall having an inwardly curved upper wall portion and inwardly curved lower wall portion, so that the annular wall is C-shaped in cross-section;

said upper wall portion having an upper peripheral edge portion defining an air inlet, the upper edge portion including means for attaching the skirt to a vehicle platform so that support air enters the air inlet;

the lower wall portion having a lower peripheral edge portion adapted to be located above ground level by support air pressure inside the skirt;

the annular wall including a foraminous fabric substrate formed of a plurality of filaments, the substrate having first and second parallel side surfaces; a first coating of polyurethane on the filaments on the first side surface; and a second coating of polyurethane on the filaments on the first surface; and a second coating of polyurethane on the filaments on the second side surface, the first and second coatings extending into the foraminous substrate and being integrally bonded together to envelope the filament and define interstices on the coated substrate between the filaments.

4,339,018

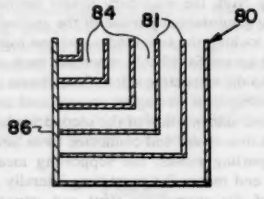
SOUND ABSORBING STRUCTURE

Glenn E. Warnaka, Erie, Pa., assignor to Lord Corporation, Erie, Pa.

Division of Ser. No. 955,543, Oct. 27, 1978, Pat. No. 4,243,117, which is a division of Ser. No. 692,834, Jun. 4, 1976, Pat. No. 4,141,433. This application May 19, 1980, Ser. No. 170,408

Int. Cl.[3] **E04B** *1/99*; **G10K** *11/04*

U.S. Cl. 181—286 **5 Claims**



1. A structure for absorbing sound waves comprising a plurality of impermeable wall means that are (1) fabricated of a material generally impermeable to a fluid in which the sound absorbing structure is to be immersed, (2) substantially free of openings therethrough, (3) generally lacking in sound absorbing capability, (4) acoustically reflective, (5) laterally spaced a distance not more than one wavelength of the predetermined highest frequency to be absorbed, and (6) formed in a non-linear configuration along the length thereof, said wall means forming an array of side-by-side elongate fluid filled cavities each having an open end and a closed end, said open ends of said cavities receiving said sound waves each of said cavities (1) having an uninterrupted dimension along said wall means greater than twice the spacing between and coextensive with said wall means, (2) having a length from said open end to said closed end at least equal to one-fourth of the wavelength of the predetermined highest frequency to be absorbed, and (3) having a uniform cross section substantially throughout the length thereof, and

acoustically reflective barrier means forming the closed ends of the said cavities, said barrier means reflecting said sound waves received within said cavities through said open ends in a direction opposite to the direction of propagation of said sound waves, the length of said cavities being uninterrupted between the sound-receiving end of said array and said barrier means.

4,339,019

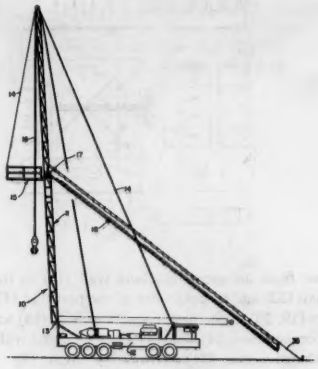
SAFETY CHUTE

Thomas R. Tracy, Boise, Id., assignor to Palladium Corporation, Boise, Id.

Filed Apr. 7, 1980, Ser. No. 137,619

Int. Cl.[3] **A62B** *1/20*

U.S. Cl. 182—47 **4 Claims**



1. An emergency escape apparatus for a structure having a working or like platform disposed at considerable distance above ground level, said apparatus comprising means defining an escape chute entrance adapted to be flexibly mounted at said platform, a cable extending from said entrance at an acute angle to the ground below, a flexible longitudinally collapsible tubular escape chute secured at one end to said entrance and slidably connected to said cable, said chute normally being longitudinally collapsed into a releasable pack at said entrance and releasably held in folded condition by a bag like cover which extends over the folded chute and is closed at the side opposite the chute entrance by flaps secured by keeper pins, and means accessible to a person about to enter the entrance end of the chute for releasing the cover to allow automatic unfolding of the chute to deploy along the cable, comprising a rip cord arrangement actuatable to speedily remove all of the pins and allow the folded pack end to move through the open flaps, said chute being adapted when released to slide down the cable while longitudinally deploying along the cable to define a continuous escape tube suspended along said cable.

4,339,020

LADDER SUPPORT

Donald H. Wiseman, 513 Tower St., Burlington, Wis. 53105

Filed Oct. 23, 1980, Ser. No. 200,069

Int. Cl.[3] **E06C** *7/48*

U.S. Cl. 182—214 **1 Claim**

1. A ladder support comprising: a plate, one side of which is covered with a soft fabric; a first L-shaped bar the horizontal leg of which is attached to the plate; a flat bar, one end of

which is attached to the top surface of the horizontal leg of the first L-shaped bar and having a pair of feet on the other end, the feet being attached to the plate and displaced with respect to the bottom surface of the flat bar so that a pocket is formed between the bar and the plate; a second L-shaped bar, the horizontal leg of which is inserted in the pocket, and which is slidably attached to the plate; a first column, the bottom end of which is pivotably attached to the vertical leg of the first L-shaped bar; a first U-bracket which is attached to the upper portion of the first column; a second column, the bottom end of which is pivotably attached to the vertical leg of the second L-shaped bar; a second U-bracket which is attached to the upper portion of the second column; first and second clamp screws which are threaded through the first and second columns respectively and may be advanced into the space circumscribed by the first and second U-brackets; and adjustable pipe means connected between the columns for maintaining the position of the columns relative to each other.

4,339,021

CARBON FIBER REINFORCED CARBON FRICTION ELEMENT AND METHOD OF MAKING

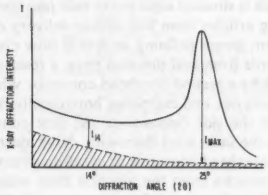
Hiroyuki Kosuda, Numazu, and Kenji Niijima, Shizuoka, both of Japan, assignors to Toho Beslon Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,221

Claims priority, application Japan, Jul. 18, 1979, 54/90325

Int. Cl.³ B32B *5/02;* **C23C** *9/06;* **B44D** *1/46;* **F16D** *13/60*

U.S. Cl. 191—50 **29 Claims**



1. A carbon fiber reinforced carbon friction element containing matrix carbon and, as a reinforcing fiber, at least one carbon fiber, wherein the crystallinity index R of the matrix carbon is from about 2.3 to 5.0, which carbon fiber reinforced carbon friction element contains an antioxidant in an amount of from about 0.02 to 0.5% by weight of the total weight of the carbon fiber reinforced carbon friction element, wherein the oxidation temperature T_0 is at least about 800° C. due to antioxidation processing during the production of the carbon fiber reinforced carbon friction element after the formation of the matrix carbon or after the completion of production thereof by incorporating an antioxidant therein by impregnating a solution of the antioxidant therein, the amount of the antioxidant being sufficient to increase the oxidation temperature T_0 of the carbon fiber reinforced carbon to about 800° C. or more, said matrix carbon being subjected to heat-treatment at a temperature of from about 1200° C. to about 2400° C. at least once during the production of the carbon fiber reinforced friction element to control the R value thereof to be in a range of from about 2.3 to 5.0.

29. A process for producing a carbon fiber reinforced carbon friction element containing matrix carbon, and, as a reinforcing fiber at least one carbon fiber, wherein the matrix carbon is heat-treated at such a temperature that the crystallinity index R of the matrix carbon is from about 2.3–5.0 and antioxidation processing is carried out during the production of the carbon fiber reinforced carbon after the formation of the matrix carbon, or after the completion thereof, by incorporating an antioxidant by impregnating a solution of the antioxidant therein in an amount of from about 0.02 to 0.5% by weight of the total weight of the carbon fiber reinforced friction element, which amount is effective to increase the oxidation temperature T_0 of the carbon fiber reinforced carbon to about 800° C. or more.

4,339,022

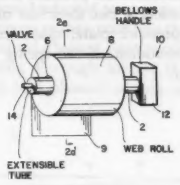
FILM WRAPPING DISPENSER HAVING A FLUID PRESSURE ACTUATED, CONTROLLED DRAG SHAFT

Lawrence Hoover, 2074 Sunset Point Rd., Unit 131, Clearwater, Fla. 33515

Filed Jun. 25, 1979, Ser. No. 51,866

Int. Cl.³ F16D *13/76*

U.S. Cl. 192—14 **8 Claims**



1. A fluid pressure actuated, manual, film wrapping dispenser, comprising:

a cylindrical, hollow tube wall formed of an extensible material, enveloping a fluid tight cavity, for rotatably engaging an inner cylindrical bearing surface of a roll of film webbing to be dispensed for wrapping about an object;

a manually squeezable bellows handle formed of a flexible, extensible material and shaped to be grasped by a human hand, connected to said tube for selectively applying fluid pressure within said cavity to radially expand said tube wall for selective frictional engagement with said inner cylindrical surface of said roll of film, for controllably tensioning said film by manually squeezing said bellows handle while wrapping said object.

4,339,023

TWIN PLATE FRICTION CLUTCHES

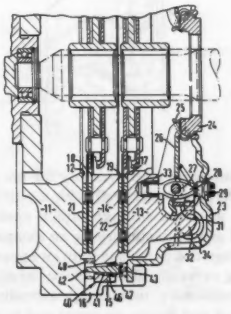
Ian C. Maycock, Leamington Spa, England, assignor to Automotive Products Limited, Leamington Spa, England

Filed May 28, 1980, Ser. No. 153,917

Claims priority, application United Kingdom, Jun. 1, 1979, 7919237

Int. Cl.³ F16D *13/75*

U.S. Cl. 192—70.25 **5 Claims**



1. A twin plate friction clutch assembly comprising a flywheel, a first driven plate, an intermediate pressure plate, a second driven plate, a main pressure plate, a cover member and releasable clutch clamping means and having friction grip adjuster means arranged to automatically control the axial position of the intermediate pressure plate within the assembly in response to wear of the friction facings of one driven plate, the intermediate pressure plate having a peripheral aperture therethrough and said adjuster means constituting a one-way clutch device incorporating lost motion means and comprising:

a spacing member passing through said aperture to define therewith a tapered space;

first spring means to urge the spring member against an abutment of the flywheel;

second spring means to urge the intermediate pressure plate away from said flywheel;

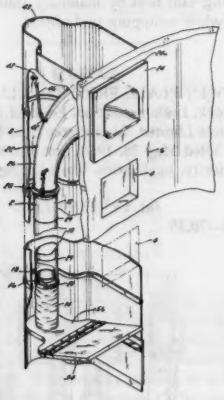
an abutment for said spacing member on the cover member; and wedging means located in said space to lock the spring member and intermediate pressure plate together to resist relative separation in one direction of axial load on said intermediate pressure plate, said wedging means being operable on abutment of the spring member with said cover member.

4,339,024

DUST-TIGHT SILO DISCHARGE PIPE ASSEMBLY

Roger W. Wollin, Lake Mills, Wis., assignor to Fiberdome Incorporated, Lake Mills, Wis.

Filed Sep. 4, 1980, Ser. No. 184,036
Int. Cl.[3] B65G *11/02*
U.S. Cl. 193—34 28 Claims



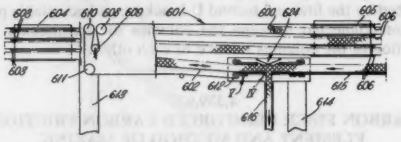
1. A silo discharge pipe assembly for use with a vertically upright silo having a side wall with a plurality of vertically spaced-apart windows through which ensilage may be discharged; said assembly comprising an elongated, flexible, collapsible, ensilage discharge bag with an upper and a lower end and extending vertically along and spaced apart from said side wall, a rigid, stationary, tubular pipe extending into said lower end of said bag and having an upper end to which said bag is detachably connected, and also having an open lower end; clamp means for attaching said bag to said upper end of said pipe; funnel conduit means detachably and selectively connectable at one end to one of said windows and extending from said window and generally downwardly to said upper end of said bag for transferring ensilage from the interior of said silo to said bag; means for attaching said conduit means to said bag, and said bag being telescopingly collapsible upon said pipe so as to permit said bag to be collapsed thereon when less than said bag's entire length is needed to transfer said ensilage.

4,339,025

APPARATUS FOR FEEDING ARTICLES

Alan K. McCombie, London, England, assignor to Molins, Ltd., London, England

Division of Ser. No. 597,431, Jul. 21, 1975, Pat. No. 4,099,608, which is a division of Ser. No. 234,833, Mar. 15, 1972, abandoned, which is a continuation of Ser. No. 875,402, Nov. 10, 1969, abandoned. This application Apr. 14, 1978, Ser. No. 896,381
Claims priority, application United Kingdom, Nov. 14, 1968, 54034/68; Jan. 24, 1969, 4195/69; Jan. 24, 1969, 4196/69; Feb. 14, 1969, 8313/69; Feb. 28, 1969, 10941/69
Int. Cl.[3] B65G *37/00, 1/04*
U.S. Cl. 198—347 37 Claims



25. A mass flow conveyor system for feeding cigarettes or other similar rod-like articles of the cigarette industry sideways from an article-delivery device to an article-receiving device, including means defining a junction zone, a first horizontal overhead conveyor arranged to carry a stack of articles of predetermined thickness into said junction zone at one end thereof which is situated adjacent to said junction zone; means for supplying articles from said article-delivery device to said first conveyor; means defining an article flow channel extending downwards from said junction zone; a reservoir having its floor formed by a second overhead conveyor which is reversible and having one end extending horizontally from the junction zone on the side opposite to the first conveyor and at substantially the same level therewith, drive means for moving said second overhead conveyor in opposite directions to selectively draw articles from the junction zone which have been supplied thereto from said first conveyor or deliver articles into the junction zone for movement to said article flow channel; top wall means for setting the thickness of the stack of articles on the second conveyor at substantially said predetermined thickness at least at the end thereof adjacent said junction zone, said junction zone being unobstructed so as to permit articles to pass freely in said stack formation from said first conveyor through said junction zone to said second conveyor without materially changing direction; and sensor means for controlling said drive means to regulate the direction of motion of said second conveyor on the basis of the articles supplied to said junction zone.

4,339,026

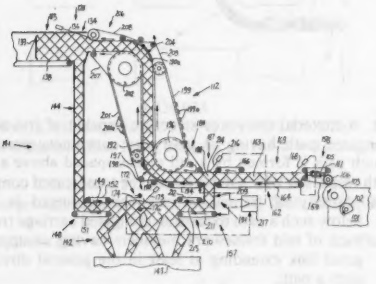
APPARATUS FOR DELIVERING CIGARETTES OR THE LIKE FROM A MAKER TO A CONSUMING MACHINE

Horst Büse; Gerhard Tolasch, both of Hamburg, and Jürgen Bantien, Hamwarde, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG, Hamburg, Fed. Rep. of Germany

Continuation of Ser. No. 6,223, Jan. 24, 1979, abandoned, which is a continuation of Ser. No. 804,332, Jun. 7, 1977, abandoned. This application Mar. 14, 1980, Ser. No. 130,391
Claims priority, application Fed. Rep. of Germany, Jun. 17, 1976, 2626157
Int. Cl.[3] B65G *1/00*
U.S. Cl. 198—347 10 Claims

1. Apparatus for delivering streams of cigarettes, filter rod sections or analogous rod-shaped articles from a producing machine to a consuming machine which includes a magazine having a first side and a second side, comprising first advancing means defining a first path having a first inlet and a first outlet, said outlet communicating with one side of said maga-

zine and said advancing means including a first transporting unit which defines a first portion of said path starting at said first inlet, a second transporting unit which defines a second portion of said path ending at said first outlet, and a substantially horizontal variable-capacity reservoir having an open end communicating with said first path intermediate said first and second portions, said first transporting unit including a substantially horizontal conveyor upstream of said reservoir and said second transporting unit including a substantially vertical conveyor downstream of said open end; second advancing means including a third transporting unit defining a second path having a second inlet and a second outlet, said second outlet communicating with the other side of said magazine; switching means interposed between said producing machine and said inlets and operable to direct articles issuing from said producing machine into a selected inlet, including a junction which receives articles from said producing machine and communicates with said first and second paths; means for conveying articles sideways in the region of said switching means including a first conveyor arranged to transport a single row of articles, a second conveyor receiving articles from said first conveyor, means for driving said first conveyor at a first



speed and means for driving said second conveyor at a lower second speed so as to effect the conversion of said single row into a multi-layer stream of articles in said second conveyor, said conveyors being disposed between said producing machine and said switching means; means for monitoring the quantity of articles in said magazine; means for monitoring the quantity of articles in said junction; means for operating said switching means to direct articles into said first inlet when the ratio of articles supplied by said producing machine to articles removed by said third transporting unit is above a predetermined value and to direct articles into said second inlet when said ratio drops to said predetermined value, said operating means including means for starting said first transporting unit when the quantity of articles in said magazine and said junction respectively rises to a first and a second predetermined value and for starting said third transporting unit when the quantity of articles in said magazine is below said first value but the quantity of articles in said junction reaches said second value; and means for varying the volume of said reservoir in dependency on the ratio of articles supplied by said producing machine through the first transporting unit to the articles fed to said consuming machine by the second transporting unit.

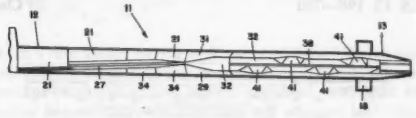
4,339,027

APPARATUS FOR ORIENTING HALVED FRUIT CUT SIDE DOWN

George E. Lauer, 6250 Melville Dr., Oakland, Calif. 94611

Filed Nov. 10, 1980, Ser. No. 205,454
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—383 **6 Claims**

1. Apparatus for orienting halved, cored fruit pieces cut faces down and aligned along a common longitudinal axis, comprising a longitudinally extending table having a receiving end elevated above a discharge end; means for defining at least one longitudinal channel on said table along which said fruit pieces translate, said means including a first side wall extending along the receiving portion of said channel; a bottom panel inclined laterally downwardly to intersect with said first wall; a second portion of said longitudinal channel coextensive with said receiving portion including a side channel disposed in concave fashion in said first side wall and extending therealong, said side channel adapted to engage an edge portion of each of said fruit pieces as they translate thereby; a third portion of said longitudinal channel contiguous with said second portion and including a trough formed in a portion of said bottom panel, said side channel urging said engaged edge



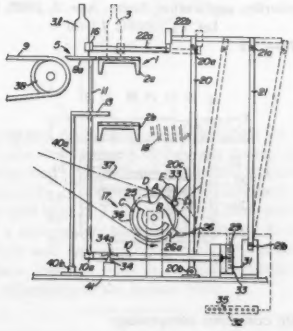
portions of said fruit pieces downwardly into said trough, said trough including generally planar, opposed sides and a V-shaped bottom, said opposed sides being spaced apart substantially less than the nominal width of said fruit pieces; a fourth portion of said longitudinal channel contiguous with said third portion and including a V-shaped bottom having walls extending the width of said longitudinal channel on which said cut faces of said fruit pieces impinge and slide; a fifth portion of said longitudinal channel contiguous with said fourth portion and including a planar, laterally extending bottom on which said cut faces land; and means for aligning said fruit pieces longitudinally.

4,339,028

METHOD AND APPARATUS FOR CHECKWEIGHING CONTAINERS

Thomas Meacle, Dun Laughaire, Ireland, assignor to Powers Manufacturing Co., Elmira, N.Y.

Filed Jul. 27, 1977, Ser. No. 819,305
Claims priority, application Ireland, Oct. 13, 1976, 2256/76
Int. Cl.³ B65G *47/26*; G01G *11/00*
U.S. Cl. 198—427 **11 Claims**



1. Apparatus comprising:

(a) a delivery conveyor for conveying glass containers in a row in a first direction,

(b) a lehr conveyor for receiving glass containers and conveying them in a direction away from and generally perpendicular to said delivery conveyor,

(c) a platform adjacent and between said conveyors, said platform being comprised of at least two portions, one portion of said platform being the pan of a weighing means,

(d) a transfer means for simultaneously transferring a plural-

ity of glass containers off said delivery conveyor, across said platform, and to said lehr conveyor, and

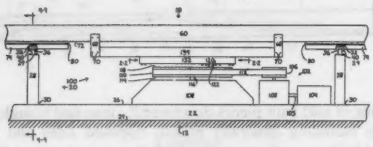
(e) weighing means associated with said one platform portion weighing at least one container supported by said one platform portion before said containers are transferred as a row from the platform onto the lehr conveyor.

4,339,029

SHAKER CONVEYOR AND DRIVE MECHANISM THEREFOR

Dennis A. Wilson, 1805 S. Darrell Rd., McHenry, Ill. 60050

Filed Feb. 9, 1981, Ser. No. 232,686
Int. Cl.³ B65G *25/04*
U.S. Cl. 198—750 **31 Claims**



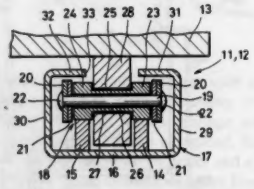
21. A shaker conveyor drive for use in affecting longitudinal reciprocating movement of a conveyor trough supported in a fixed guide way so as to be movable only longitudinally, said conveyor drive comprising, in combination, a fly wheel, means supporting said fly wheel for rotation about a first axis of rotation, an eccentric secured to said fly wheel on an upper fly wheel side, a reciprocating plate secured to said eccentric, said eccentric being eccentrically and rotatably mounted within said reciprocating plate and secured eccentrically thereto, and said shaker drive secured to a trough support for said conveyor trough, and said reciprocating plate rotatably and eccentrically mounted within said trough support.

4,339,030

CHAIN CONVEYOR FOR MOVING ARTICLES ACCUMULATABLY AT AN INCREASED SPEED

Yasunari Hirata, 5-21, Toroku 5-chome, Kumamoto-shi, Kumamoto-ken, Japan

Filed Sep. 8, 1980, Ser. No. 185,405
Claims priority, application Japan, Apr. 3, 1980, 55-42871
Int. Cl.³ B65G *17/00*
U.S. Cl. 198—779 **8 Claims**



1. A chain conveyor comprising:

(a) rail means; and

(b) a roller chain including a plurality of interconnected pins, a chain roller rotatably fitted over each of said pins and riding on said rail for being rollingly drivable therealong, and feed roller means having a diameter larger than that of said chain roller and loosely fitted over said chain roller for supporting thereon an article to be conveyed;

(c) said feed roller means being frictionally engageable under the weight of the article with said chain roller for substantial corotation therewith upon said chain roller's being rollingly driven on said rail, whereby the article on said roller can be conveyed at a speed larger than that of travel of said chain roller; and

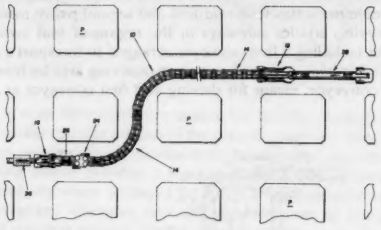
(d) said feed roller being rotatable in a direction opposite to the direction of rotation of said chain roller without substantial slippage against the article while the latter is being stopped, during rolling movement of said chain roller along said rail.

4,339,031

MONORAIL SUSPENDED CONVEYOR SYSTEM

Neal W. Densmore, Franklin, Pa., assignor to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Oct. 1, 1979, Ser. No. 80,760
Int. Cl.³ B65G *41/02*
U.S. Cl. 198—864 **29 Claims**



1. A material conveyor structure capable of traversing an elongated path having at least one curvilinear portion and which path is formed by a rail means spaced above a surface with respect to which material is to be transported comprising,

a plurality of framework members arranged in tandem below such a path to form an elongated carriage train with each of said framework members having an upper elongated link extending at least in the general direction of such a path,

connector means cooperable with the ends of said links, respectively, to support adjacent ones of said links for a universal type of relative movement therebetween,

said connector means including means adapted to cooperate with such a rail means to provide for unitary movement of said carriage train along such a path,

said framework members being swingable about axes extending longitudinally of said links, respectively,

said framework members including means for supporting an orbitally movable conveyor belt below said links with a continuous conveying run thereof operable to convey material throughout the longitudinal extent of said carriage train, and

cooperable means carried by adjacent portions of said framework members, respectively, to maintain said framework members in an alignment that said conveying run is capable of conveying material with respect to said carriage train as said carriage train travels along such a path.

4,339,032

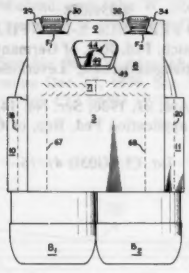
BOTTLE CARRIER WITH PERIPHERAL SKIRT

Prentice J. Wood, Hapeville, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Nov. 10, 1980, Ser. No. 205,533
Int. Cl.³ B65D *85/62*; B66C *1/10*; B65D *75/00*
U.S. Cl. 206—158 **16 Claims**

1. A bottomless carrier for accommodating a plurality of bottles arranged in close side-by-side relationship, which carrier comprises a pair of opposing side walls flanking wall portions of the bottles, said side walls including mutually inclined upper portions directly hinged together and providing a top of the carrier, said top having a bottle-neck receiving aperture for each bottle and including bottle-neck engaging means provided by said upper portions of the side walls to

support the bottle when the carrier is lifted, an end wall connecting together lower portions of said side walls at each end of the carrier and providing, together with lower portions of said side walls, a peripheral skirt to maintain the bottles in close



side-by-side relationship, characterized in that at least one tie element connects together said upper portions of the side walls to limit movement of said upper portions away from one another.

4,339,033

PACK FOR CONFECTIONERY PRODUCTS

Lorenzo Cillario, Alba, Italy, assignor to Ferrero S.p.A., Alba, Italy

Filed Nov. 26, 1980, Ser. No. 211,539
Claims priority, application Italy, Jan. 10, 1980, 52820/80[U]
Int. Cl.³ B65D *85/62*
U.S. Cl. 206—216 **12 Claims**

1. A pack for confectionery products, comprising:

a support plate formed to define two apertures therein;

two pots inserted in respective ones of the said two apertures of the support plate and containing two different types of product, each pot having a mouth and being formed in correspondence therewith with a peripheral flange which rests on said support plate, each said pot being further provided with a seal of sheet material closing off the mouth of the pot;

an adhesive label which has a profile corresponding to the outline of said support plate and is applied to this plate in such a manner as to adhere both to the plate and to the seals of the said two pots;

a tongue extending from one portion of the boundary of the adhesive label, said tongue having an adhesive face and being separable from the said label by tearing; and

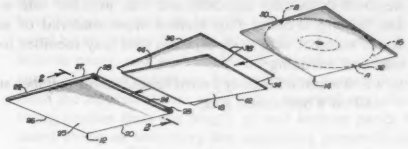
a flexible flat container which can be torn open and contains a small spoon, said container being carried by the said tongue due to adhesion between the adhesive face of the tongue and the container.

4,339,034

DISC JACKET WARP FREE INSERT

Mike Panveno, Canoga Park, Calif., assignor to Album Graphics, Inc., Hollywood, Calif.

Filed Aug. 3, 1981, Ser. No. 289,762
Int. Cl.³ B65D *85/30, 85/57*
U.S. Cl. 206—313 **7 Claims**



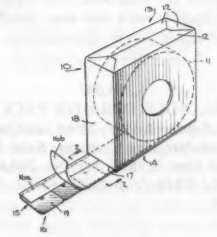
1. In a disc jacket having a plurality of flaps forming elongated ridges, the improvement comprising a removable disc protector having first and second members, with said first member disposed between said flaps and adjacent said ridges, and said second member having outwardly extending arms disposed beneath said flaps, said second member for urging said disc into contact with said flaps along the length thereof, whereby a disc is retained between said flaps and said protector so as to equalize the forces on the edges of said disc.

4,339,035

DISPENSING PACKAGE FOR NIPPLE MARKERS

Robert Marcus, 8201 Henry Ave., Apt. M16, Philadelphia, Pa. 19128; Warren B. Gefter, 243 Wiltshire Rd., Wynnewood, Pa. 19151, and Wallace T. Miller, 3105 Coulter St., Philadelphia, Pa. 19129

Filed Dec. 18, 1980, Ser. No. 217,781
Int. Cl.³ B65D *5/72, 85/671*; G21F *3/00*
U.S. Cl. 206—370 **7 Claims**



1. A dispensing package for nipple markers for use in chest X-ray procedures comprising tape supply means, an elongated base tape disposed in said supply means and dispensable therefrom, a plurality of flexible adhesive members releaseably adhered to said base tape, each such member having a nipple marker of a material substantially opaque to X-rays adhered thereto, each said member being manually removable from said base tape together with its respective nipple marker for releasable adherence to the human body.

4,339,036

CONTAINER VENTING ARRANGEMENT

James R. Jensen, Fremont, Calif., assignor to Container Corporation of America, Chicago, Ill.

Filed Dec. 18, 1980, Ser. No. 217,903
Int. Cl.³ B65D *85/50, 51/16*
U.S. Cl. 206—423 **3 Claims**

1. A venting arrangement for a container having telescoping tray and cover members, comprising;

(a) a tray member having at least one side wall including:

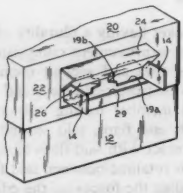
(i) a pair of lock tabs formed from material of said side

wall and foldably joined thereto on vertical axes for movement outwardly from the plane thereof to provide vent openings therein;

(ii) a pair of access tabs formed of material of said side wall and foldably joined thereto on vertical axes for movement inwardly from the plane thereof to provide openings for finger access to said lock tabs;

(b) a telescoping cover member having at least one side wall disposed outwardly adjacent said tray member side wall and having a cover flap formed from material of said cover member side wall adjacent said tray member lock tabs and including:

(i) a first section foldably joined to said cover member side wall on a horizontal axis;



(ii) a second section foldably joined to said first section on a horizontal score line;

(iii) said sections being foldable outwardly from the plane of said cover member side wall and into converging planes to expose said tray member side wall vent openings when said lock tabs are folded outwardly at an angle of 90° to said tray member side wall, said lock tabs being disposed in a parallel and spaced apart relationship;

(c) said first and second sections being foldable at an angle to each other, lower edges of said second section being disposed within the side wall vent openings and being securely engageable with said tray member lock tabs to maintain said cover flap in open position.

4,339,037

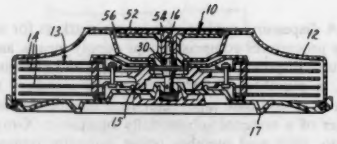
MOLDABLE HANDLE FOR DISK PACK ASSEMBLY

Arlin B. Doering, South St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Nov. 6, 1980, Ser. No. 204,631

Int. Cl.³ G11B *1/02*; B65D *85/57, 25/28*

U.S. Cl. 206—444 **6 Claims**



1. A handle adapted for releasably engaging an axle in a computer disk pack memory unit, said handle including:

a first part comprising a stem portion having a contact surface, a through passageway having an axis and opening through said contact surface, and an inwardly projecting lip adjacent said contact surface decreasing the transverse area of said passageway to closely receive the axle;

a plurality of pins fixed in said first part and having portions projecting from said contact surface in a direction generally parallel with said axis, said pins being adapted to engage the axle;

a second part comprising a portion fixed in said passageway and entering said passageway on the end of said stem portion opposite said projecting lip, said second part having a distal end spaced from said lip and having a cavity opening through said distal end; and

one of said parts includes a portion adapted for manual engagement extending generally transverse of said axis.

4,339,038

REINFORCED FLEXIBLE X-RAY FILM CASSETTE

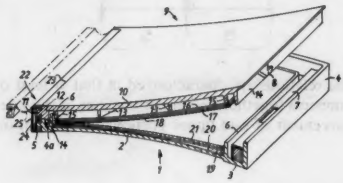
Walter Bauer, Munich, Fed. Rep. of Germany, assignor to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 21, 1980, Ser. No. 142,086

Claims priority, application Fed. Rep. of Germany, Apr. 30, 1979, 2917546

Int. Cl.³ G03B *41/16*

U.S. Cl. 206—455 **30 Claims**



1. A film cassette, especially for x-ray film, comprising a pair of cassette parts; hinge means connecting said cassette parts to one another for displacement between an open and a closed position; and means defining a film-accommodating space in the cassette including cooperating ribs on said cassette parts which at least partly bound said space, said ribs overlapping and being in shape-maintaining engagement with one another in said closed position, and each of said ribs having a pair of surfaces which are inclined relative to one another at a small angle so as to impart a wedge-shaped configuration to said ribs and cause the latter to be in said shape-maintaining engagement in said closed position.

4,339,039

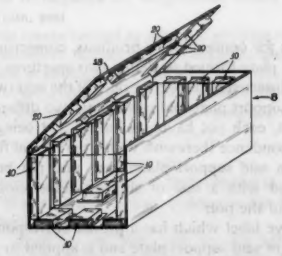
IMPACT RESISTANT FOAM CUSHIONED PACKAGES

Laurie G. Mykleby, Palos Park, Ill., assignor to First National Packaging Co., Inc., Palos Park, Ill.

Filed Jul. 25, 1980, Ser. No. 172,276

Int. Cl.³ B65D *81/04, 85/30*

U.S. Cl. 206—523 **12 Claims**



10. A package for articles having improved dynamic resistance to applied forces comprising a container and a plurality of cushions secured to the inside of said container, said cushions comprising compressible foam material, pliable non-porous covering means for contiguously covering said foam material, and air flow controlling means in said covering means controlling the escape of air from said foam material when said foam material is compressed, whereby said article is supported

by said cushions and is held snugly in place by said cushions when said container is closed.

4,339,040

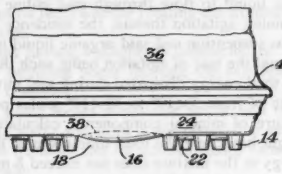
FORK LIFT PALLET CONSTRUCTION

Charles A. Peil, Midland, and John W. McLaren, Beaverton, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 904,836, May 11, 1978, abandoned. This application Dec. 17, 1979, Ser. No. 104,209

Int. Cl.[3] B65D *19/00*

U.S. Cl. 206—599 8 Claims



1. A lightweight pallet of from between about 2¼ to about 9 pounds in weight and having a raised load supporting platform, the pallet comprising:

(a) a thin flexible sheet of heat-formable thermoplastic material, said flexible sheet comprising the load supporting platform of the pallet;

(b) a rigid base in the vertical direction, the base supporting said flexible sheet in a normally disposed horizontal, raised position, and being characterized by sufficient rigidity to resist substantial compressive deformation under a compressive load, uniformly applied over the horizontal load supporting area of the flexible sheet, of 300 times the weight of the pallet;

(c) the rigid base comprising hollow thin-walled ground engageable column means, said base comprising from between about 10 to about 40 column means for each square foot of the horizontal load supporting area of the flexible sheet; said column means being from between about ¾ to about 2 inches in depth and comprising depressions formed in the flexible sheet;

(d) the flexible sheet comprising stiffening rib means integrally formed therein and further comprising a pair of non-ground supported, laterally spaced and parallel flexible sheet portions engageable at the underside with the tines of a lift fork;

(e) said rigid base and flexible sheet being formed integrally of a heat formable sheet of thermoplastic of from between about 30 to about 120 mils average sheet thickness.

4,339,041

COMPOSITE PACKAGING SYSTEM INCLUDING AN OUTER PARALLELOGRAM CONTAINER ADAPTED TO HOLD A PLURALITY OF WEDGE SHAPED INNER CARTONS

Harry H. Roberts, Roswell, Ga., and Raymond A. Cote, Taylorsville, N.C., assignors to Champion International Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 161,027, Jun. 19, 1980, Pat. No. 4,313,542, which is a continuation-in-part of Ser. No. 57,164, Jul. 13, 1979, abandoned. This application Aug. 18, 1980, Ser. No. 179,109

Int. Cl.[3] B65D *5/54*

U.S. Cl. 206—611 9 Claims

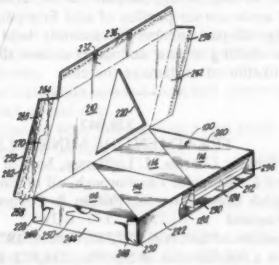
1. A composite packaging system including a plurality of individual wedge shaped cartons each configured to hold a piece of pie, and an outer parallelogram carton adapted to hold an even number of wedge shaped cartons, said composite packaging system comprising:

at least two wedge shaped cartons, each wedge shaped carton being formed of a one piece foldable cardboard blank and having a slanted end wall, said carton thereby conforming to the configuration of, and useful for containing a wedge shaped piece of pie having a slanted crust portion, said wedge shaped carton including

a triangular bottom panel having a base edge and two side edges;

a triangular top panel disposed in spaced, parallel relationship with said bottom panel and having a base edge and two side edges, with the length of the base edge of said top panel being greater than the length of the base edge of said bottom panel, and with the length of said top panel measured along an imaginary line extending perpendicularly from the associated base edge to the opposed apex thereof being greater than the length of said bottom panel measured along an imaginary line extending perpendicularly from the associated base edge to the opposed apex thereof;

a pair of side walls extending between the associated side edges of said top and bottom panels and disposed perpendicular thereto, each said side wall being formed of inner and outer side wall members, with the bottom edge of each said inner side wall member being hingedly connected to the associated side edge of said bottom panel, and with the top edge of each said outer side wall member being hingedly connected to the associated side edge of said top panel, and with each said outer side wall member overlying and being adhesively connected to the associated inner side wall member, and wherein each said outer



side wall member further includes a pair of spaced, intermittent cut lines extending along the length thereof and defining a tear strip to permit easy opening of the carton;

a trapezoidal end wall having top, bottom and side edges, with said top edge of said end wall and said base edge of said top panel being hingedly connected and of equal length and with said bottom edge of said end wall and said base edge of said bottom panel being hingedly connected and of equal length, and with said side edges of said end wall being respectively connected to the adjacent side edges of said side walls, and with said end wall sloping outwardly away from the interior of said carton, from said bottom edge to said top edge, such that said carton conforms to the shape of said pie piece with said sloping end wall functioning to provide increased protection and support to the slanted crust portion thereof;

said packaging system further including a tubular outer carton having a general parallelogram configuration in plan, said outer carton including, top and bottom panels disposed in spaced apart parallel relationsip, each said top and bottom panels being substantially identical and having a parallelogram configuration; and

an upstanding tubular side wall including alternately hingedly connected opposed side and end panels, said side wall being hingedly connected around the periphery of said top and bottom panels and extending therebetween, with said hinged connections forming said side wall defining first and second pairs of opposed corner portions, with each corner portion of said first pair being an acute angle,

substantially equal to the included angle defined by a base edge and a side edge of the top panel of a wedge shaped carton, and with each corner portion of said second pair being at an obtuse angle substantially equal to the sum of two angles, the first of said two angles being said acute angle and the second of said two angles being the included angle defined by the side edges of a top panel of a wedge shaped carton,

and with the length of each said side panel of said outer carton being substantially equal to the sum of the lengths of the base edges of each triangular top panel of the wedge shaped cartons, housed within said outer carton divided by two,

with the width of said outer carton, measured along an imaginary line perpendicular to both said opposed side panels, being substantially equal to said length of a top panel of said wedge shaped carton,

and with the height of said outer carton being substantially equal to the height of a wedge shaped carton,

said wedge shaped cartons being disposed within said outer carton in an array wherein said base edges of said top panels are disposed in abutting relationship with one of said opposed side wall panels, with contiguous adjacent wedge shaped cartons being oriented in opposite directions, such that the side walls of each adjacent contiguous wedge shaped carton are disposed in coplanar abutting relationship, and wherein the wedge shaped cartons, which are located adjacent said end panels of said outer carton, are disposed such that one corner thereof, defined by the juncture of a base edge and side edge of said top panel of said wedge shaped carton, coincides with one said acute corner portion of said first pair, whereby said wedge shaped cartons are securely held and prevented from shifting within said outer carton thereby reducing the likelihood of damage thereto.

4,339,042

TREATMENT OF MINERALS

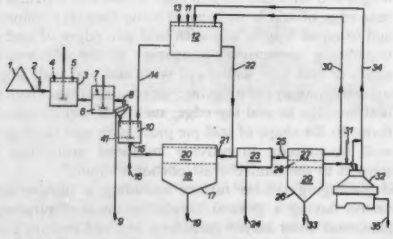
William Windle; Charles H. Lofthouse, both of St. Austell, and Howard L. Shergold, Farnborough, all of England, assignors to English Clays Lovering Pochin & Company, Ltd., Cornwall, England

Continuation of Ser. No. 875,382, Feb. 6, 1978, abandoned, which is a continuation of Ser. No. 754,952, Dec. 28, 1976, abandoned, which is a continuation of Ser. No. 451,205, Mar. 14, 1971, abandoned. This application Feb. 28, 1979, Ser. No. 16,158

Claims priority, application United Kingdom, Mar. 19, 1973, 13174/73

Int. Cl.³ C09C *1/42*; B03B *1/04*; B03D *3/06*

U.S. Cl. 209—5 **14 Claims**



1. In a process for separating from a mixture of mineral components at least one of said components, the mixture of mineral components being in the form of an aqueous suspension containing up to 60% by weight of said mixture of mineral components, the improvement which comprises:

(a) continuously feeding said aqueous suspension to an in-line mixer positioned downstream from the point of formation of said aqueous suspension, the aqueous suspension being fed to said in-line mixer at a dilution such that the solids content thereof is not greater than about 20% by weight;

(b) feeding to said in-line mixer, from a reservoir, a non-polar organic liquid in which there has been dissolved or suspended an anionic collector for at least one component of said mixture of mineral components, the rates of feeding said aqueous suspension and said non-polar organic liquid to said in-line mixer being such that the volume ratio of said aqueous suspension to said non-polar organic liquid is in the range of from 1:1 to 9:1;

(c) mixing together said aqueous suspension and said non-polar organic liquid containing said ionic collector in said in-line mixer by causing said aqueous suspension and said organic liquid to flow through said in-line mixer while maintaining agitation therein, the residence time of said aqueous suspension and said organic liquid in said in-line mixer and the rate of agitation being such that:

(i) the total energy dissipated during said mixing is in the range of from 3×10^4 to 30×10^4 joules per kg of the mixture of mineral components, calculated on a dry weight basis, and the total time taken to dissipate said energy in the mixture does not exceed 8 minutes; and

(ii) one liquid is uniformly dispersed in the other but a stable emulsion is not formed, whereby at least said one component of the mixture of mineral components becomes concentrated at the interface between the non-polar organic liquid phase and the aqueous liquid phase, and the remaining one or more components of said mixture of mineral components becomes concentrated in the aqueous liquid phase;

(d) discharging from the in-line mixer a mixture comprising said non-polar organic liquid phase and said aqueous liquid phase;

(e) separating the two liquid phases discharged from the in-line mixer; and

(f) recovering from the non-polar organic liquid phase at least a portion of said organic liquid and returning it to said reservoir for recycling in said process.

4,339,043

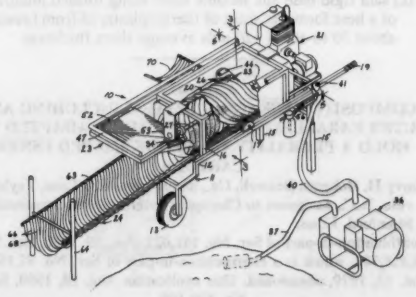
PORTABLE MINING APPARATUS

Richard P. Tice, and Isabelle L. Tice, both of N. 3211 Nelson, Spokane, Wash. 99206

Filed Feb. 2, 1981, Ser. No. 230,860

Int. Cl.³ B03B *7/00*

U.S. Cl. 209—44 **28 Claims**



1. A portable mining apparatus for classifying placer material into sized and oversized grades and recovering values therefrom, comprising:

a portable frame;

a hollow trommel mounted to the frame for rotation about a central trommel axis having an open infeed end and an opposed discharge end;

said trommel having a continuous perforated wall formed about the central axis for passing the sized grade and retaining the oversized grade of the placer material;

said perforated wall having spiral corrugations disposed angularly along the trommel axis in a helix configuration so that rotation of the trommel will result in axial movement of free placer material held therein to agitate the material to continuously present sized grade material to the perforations of the wall and for delivering oversized grade out through a discharge end;

a hollow axle, coaxial with the central axis, mounting said trommel to the frame;

wherein said axle includes a plurality of apertures spaced along its length;

drive means on the frame for rotating the trommel about the central axis;

pump means having a discharge connected to the hollow axle for pumping water through the axle apertures and into the trommel;

elongated sluice means mountable below said trommel for receiving water and sized grade material at an intake end from the trommel and for concentrating values from the sized grade;

a suction tube operably mounted to the frame;

suction pump mounted to the suction pump for collecting water and concentrate from the sluice means;

a settling tank connected to the suction tube for receiving water and concentrate; and

a discharge tube leading from the settling tank to the intake end of the sluice for recycling water and placer material not collected within the settling tank.

4,339,044

INSTALLATION FOR INSPECTING AND SORTING PRINTED SHEETS OF PAPER

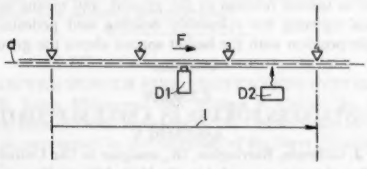
Claude Grosvernier, Hauterive, Switzerland, assignor to Compagnie Industrielle Radioelectrique, Switzerland

Filed May 14, 1980, Ser. No. 149,563

Claims priority, application Switzerland, May 31, 1979, 5066/79

Int. Cl.³ B07C 5/00

U.S. Cl. 209—564 **3 Claims**



1. An installation for inspecting and sorting printed sheets of paper comprising means for continuously transporting said sheets along a linear transfer path along which are disposed a plurality of devices for inspecting the sheets according to different criteria, and a switch at the end of the transfer path, controlled by the inspecting devices, for sorting the sheets into "accepted" sheets and "rejected" sheets, wherein the installation comprises associated with each inspection device, a device for detecting the passage of the sheets and a cyclic counter for assigning a consecutive number of a repeating series to each sheet detected, a reference memory in respect of each number assigned by the counters, shift registers between each of the inspection devices and the reference memories, a logic circuit between the counters and the reference memories for directing information from the inspection devices to the reference memory which corresponds to the number assigned to a sheet by the counters, and means for determining the position of the switch from the memorized signals.

4,339,045

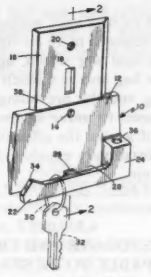
SWITCH PLATE ARTICLE HOLDER

Leo Bodin, 2770 Dennis La., Lemon Grove, Calif. 92045

Filed Jun. 3, 1980, Ser. No. 156,184

Int. Cl.³ A47F 7/00

U.S. Cl. 211—13 **5 Claims**



1. An article rack for mounting on a wall switch comprising:

a mounting plate adapted to be detachably secured to a wall mounted electrical switch,

an arm spaced outward from said mounting plate and extending horizontally, parallel to the plate for receiving and holding a key ring and the like,

a first support block member supporting said arm on said mounting plate,

a vertically open horizontally elongated slot extending across the face of said plate for receiving the side piece of a pair of glasses,

a stop member extending upward from said upper surface at the outer end of said arm,

a vertically oriented bore formed in said first block member for receiving and holding a pencil.

4,339,046

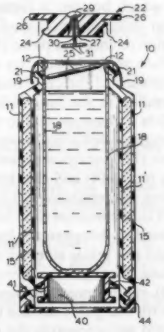
NURSING BOTTLE

Robert Coen, 9 Briarcliff Dr., Port Washington, N.Y. 11050

Filed Jan. 26, 1981, Ser. No. 228,060

Int. Cl.³ A61J 9/04

U.S. Cl. 215—11 B **8 Claims**



1. A nursing unit comprising:

an open-ended, elongated, tubular nursing holder having a hollow sidewall and a neck portion at one open end thereof;

a disposable, collapsible, liquid-retaining bag open at one end thereof received within said tubular nursing holder, said bag having an upper marginal portion adjacent to said open end thereof folded outwardly and over the external surface of said neck portion;

a plug member at least partially received within said neck portion adapted to clamp a portion of said bag adjacent to said upper marginal portion thereof against the internal surface of said neck portion, said plug member having an axial bore formed therethrough and a one-way check valve associated therewith for allowing liquid to be withdrawn from said bag while serving to prevent the entry of air thereinto;

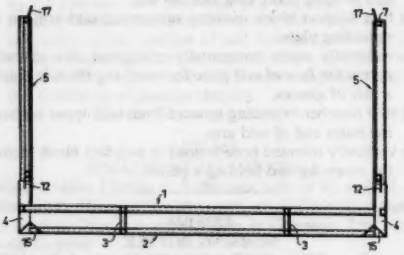
a nipple mounted on said neck portion; and

a piston slidably retained in an air-tight manner within said holder beneath said bag which, upon withdrawal of the liquid from the bag and as a result of the vacuum generated in the bag and the prevailing ambient atmospheric pressure, is caused to move against said bag causing the collapse thereof so that the effective inner volume of the bag always substantially equals the volume of the liquid remaining therein.

4,339,047

COLLAPSIBLE STORAGE AND TRANSPORT CRATE CAPABLE TO BE STACKED

Ingvar H. Johansson; Helle G. Johansson, both of Alvesta; Kurt Webing, Helsingborg, and Gunnar Thulin, Ängelholm, all of Sweden, assignors to AB Maskinarbeten, Alvesta, Sweden

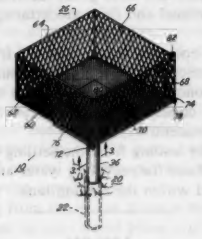
Filed Jul. 24, 1980, Ser. No. 171,819
Int. Cl.³ B65D *21/02, 88/02, 6/18*
U.S. Cl. 220—1.5 **3 Claims**

1. A collapsible storage and transport crate capable of being stacked upon each other, each crate consisting of a square bottom (1,2) and two lateral pieces (5) arranged straight opposite to each other, which bottom is formed for handling the crate from all its four sides, and provided in each corner with an upwardly open pipe connecting piece (4) which is extended above the floor surface of the bottom by a portion of its shell surface (8) facing outward of the crate and is further provided with a slit (11) extending in the longitudinal direction of the connecting piece (4) in a plane parallel to the lateral piece, the lateral piece (5) being provided at its lower portion with downwardly directed pins (13), which are axially movable in two adjacent connecting pieces (4) and that heads (14) attached to the pins and extending perpendicularly to the pins extend into said respective slit (11), the bottom (1,2) having lower longitudinal frame stays extending between the lowermost ends of the connecting pieces and the lower sides of which are on a level with planes extending through the lower end sides of the connecting pieces (4), each connecting piece (4) having a guide boss (12) arranged with one guide surface (18) extending along the plane of the lateral piece towards the opposed connecting piece and starting from the inner edge of the upper end of the connecting piece and obliquely upwards to a point above the upper end side of the connecting piece (4) lying on a horizontal plane, a downwardly open V-shaped profile (15) starting from the inner edge of the respective connecting piece being arranged below and along the respective lateral piece (5), walls (16) being arranged in the profile converging towards each other to form two downwardly open pyramid-shaped pockets spaced from the connecting piece (4), the lower edges of the profiles being on a level with the lower end sides of the connecting pieces, and each lateral piece (5) having on its upper edge two upwards wedge-shaped tongues (17) extending above the upper edge and inclined towards the center of the crate, each intended to fit into each its pocket of a crate placed above crates, so that when the crates are stacked upon each other, the lower end sides of the connecting pieces (4) of a crate placed above is guided by unfolded lateral pieces to a position resting on the upper end side of the respective connecting piece by means of the guide surfaces of the guide bosses (12) and the V-shape of the profiles.

4,339,048

GARBAGE BAG HOLDER

Bruce A. McMillen, and Beverly A. Cortier, both of 26013 U.S. 20, South Bend, Ind. 46628

Filed Aug. 18, 1980, Ser. No. 178,699
Int. Cl.³ B65D *25/24, 6/08*
U.S. Cl. 220—18 **8 Claims**



1. A garbage bag holder for minimizing accessibility to garbage bags by animals, comprising four side walls forming a rectangularly shaped basket for holding the bags to prevent them from tipping out of said basket, a perforated bottom on which the bags are placed, one of said side walls being pivoted to said bottom for swinging downwardly to open the respective side and provide free access to the basket, means joining the other three side walls to form a rigid structure, a pedestal disposed under said bottom of said basket for supporting said basket in spaced relation to the ground, and means having a vertical opening for releasably holding said pedestal in an upright position with the basket spaced above the ground.

4,339,049

CONTAINERS FOR USE IN A SELF SUPPORTING ASSEMBLY

Peter J. Gillespie, Barrington, Ill., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 17, 1980, Ser. No. 141,075
Int. Cl.³ B65D *21/02*
U.S. Cl. 220—23.4 **2 Claims**

1. An assembly of battery cell containers stacked together with side walls in facing engagement adapted to prevent relative movement of containers in planes parallel to the side walls and further adapted to provide longitudinal channels for coolant flow between adjacent facing side walls, each of said containers comprising:

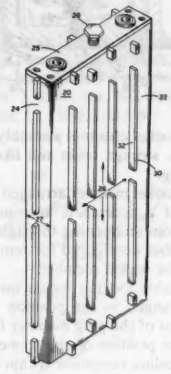
a pair of oppositely facing parallel side walls of generally rectangular shape and pairs of oppositely facing end walls defining an internal chamber for an electrochemical cell requiring cooling;

each of said side walls having rectangular external surfaces at the side surfaces of the container facing the corresponding side surface of an adjacent container;

each of the side surfaces having a first and a second plurality of ribs projecting perpendicularly therefrom with surfaces

contiguous to corresponding rib surfaces on an adjacent container side surface;

said first plurality of ribs including enlongated first and second pairs of ribs longitudinally coextending along each side surface of each container, the first pair of ribs laterally spaced apart sufficiently to receive the second pair of ribs of an adjacent facing side surface between said first pair in coextensive contact at longitudinal rib surfaces perpendicular to the side surface of the container whereby relative lateral and rotational motion in planes parallel to the container side surfaces are restrained, and whereby longitudinal channels for coolant flow are provided between the ribs of the second pair;



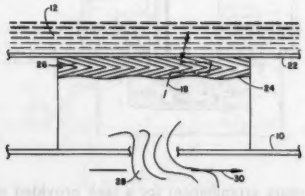
said second plurality of ribs including first and second pairs of rib-like end posts at both outer lengthwise margins of the side surface beyond the length of the first plurality of ribs, each end post of both the first and second pairs being longitudinally offset from the other end post in the pair such that the first pair of end posts receives the second pair of end posts on an adjacent facing side surface in contact at lateral post surfaces perpendicular to the container side surface and perpendicular to the longitudinal rib surfaces of said first plurality whereby relative longitudinal and rotational motion in planes parallel to the container side surfaces are restrained.

4,339,050

LOUVRE BUFFER FIRE PREVENTION SYSTEM

Jack R. Bates, Ridgecrest, and William E. Collier, Jr., China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 3, 1980, Ser. No. 203,012
Int. Cl.³ B65D *25/34*
U.S. Cl. 220—437 **6 Claims**



1. A fire prevention system for fuel tanks ruptured by explosive incendiary projectiles comprising:

a collapsible plurality of louvres mounted to the outside of said fuel tank by epoxy bonding, said louvres being shaped to have a predetermined overlap with adjacent louvres, said louvres having a noncollapsed configuration prior to the explosion of said explosive incendiary projectile and a collapsed configuration caused by the explosion of said explosive incendiary projectile, such that any straight line path through the uncollapsed configuration is disrupted by the collapsed configuration; and

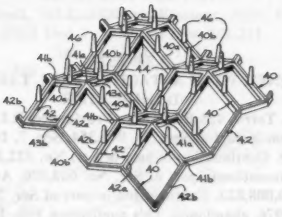
a cover placed over said louvres on the opposite side of said louvres from said fuel tank, said cover forming a pressure surface that collapses with the collapsible louvres if a predetermined pressure occurs on the opposite side of said cover from said louvres.

4,339,051

SILVERWARE BASKET

John G. Crawford, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 18, 1980, Ser. No. 179,344
Int. Cl.³ B65D *7/20, 7/42;* A47G *19/08;* B08B *13/00*
U.S. Cl. 220—66 **9 Claims**



1. A silverware basket for use in a dishwasher comprising: a perforate bottom wall and sidewalls extending upwardly from said bottom wall defining a space for receiving items to be washed; said bottom wall being formed of a first plurality of parallel undulating ribs, each rib being spaced apart horizontally and vertically from its adjacent ribs, and a second plurality of parallel undulating ribs extending at an angle to said first plurality of ribs, each one of said second plurality of ribs being spaced apart vertically and horizontally from its adjacent ribs, each one of said first plurality of ribs intersecting each one of said second plurality of ribs such that each point of intersection is displaced vertically from its adjacent points of intersection.

4,339,052

SECONDARY SEAL FOR FLOATING ROOF STORAGE TANKS

Richard E. Hills, Coraopolis, and Thomas J. Tague, Pittsburgh, both of Pa., assignors to Pittsburgh-Des Moines Corporation, Pittsburgh, Pa.

Filed Jun. 11, 1981, Ser. No. 272,647
Int. Cl.³ B65D *87/207*
U.S. Cl. 220—226 **10 Claims**

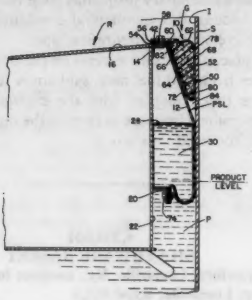
1. A secondary seal for a floating roof located in a tank shell comprising:

a body substantially in the shape of a right triangle having a pair of legs connected to a hypotenuse;

a mounting means connected to a floating roof substantially at the top of such floating roof;

said body being connected to said mounting means and oriented so that said hypotenuse extends from said roof top to a location below said roof top away from said floating roof, and one leg extends outwardly from said floating roof to form an extension of such roof and to be

essentially co-level with the rim of that roof, the other leg of the body being positioned to contact a wall of the tank



shell, and said hypotenuse being located to contact an upper portion of a primary seal.

4,339,053

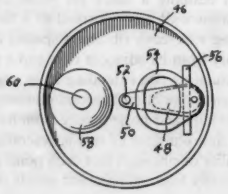
CONTAINER WITH ATTACHED PULL TAB OPENER AND INDICATOR

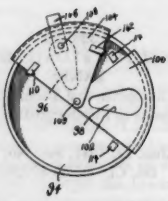
Richard E. Tarro, 425 Broadway, Providence, R.I. 02909

Continuation-in-part of Ser. No. 940,354, Sep. 7, 1978, Pat. No. 4,234,099, Continuation-in-part of Ser. No. 422,265, Dec. 6, 1973, Continuation-in-part of Ser. No. 603,590, Aug. 11, 1975, Pat. No. 4,008,823, Continuation-in-part of Ser. No. 744,196, Nov. 22, 1976, abandoned. This application Feb. 11, 1980, Ser. No. 120,671

Int. Cl.[3] B65D *17/34*

U.S. Cl. 220—269 9 Claims





4. A pull tab opener device for a container having a metal top comprising a scored portion outlining the opening of a generally oval shape aligning axially with a radius of the top, a pull tab attached to said scored portion adjacent one end thereof, and means for indicating that said container has been opened, a portion of said means remaining on said top after said container has been opened, said top being provided with an indicating area that is biased from the horizontal by either internal or external pressure, said area snapping back to the horizontal when said scored portion has been opened.

4,339,054

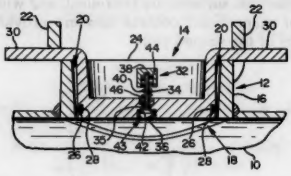
PRESSURE RELIEVED PLUG AND SOCKET CLEANOUT ASSEMBLY

Charles W. Kellogg, 18220 NE. Cramer Rd., Battleground, Wash. 98604

Filed May 1, 1980, Ser. No. 145,689

Int. Cl.[3] B65D *41/06, 41/36*

U.S. Cl. 220—295 3 Claims



1. A plug and socket cleanout assembly for pressurized fluid transmission lines, storage tanks and like receptacles, the assembly comprising:

(a) an annular socket member arranged for attachment to the outer side of a receptacle surrounding and extending outwardly from an opening through the receptacle,

(b) a plug member configured for removable sealing reception within the socket member,

(c) interengageable locking means on the socket and plug members arranged in the position of disengagement to allow removal of the plug member from the socket member and in the position of engagement to secure the plug member in sealing reception within the socket member,

(d) the plug member being configured such that when it is in the position of sealing reception within the socket member the inner surface of the plug member substantially matches and lies substantially in the same plane as the inner surface of the receptacle, and

(e) normally closed pressure relief valve means on the plug member arranged in said normally closed position within the plane of the inner surface of the plug member.

4,339,055

TANK CLOSURE ARRANGEMENT

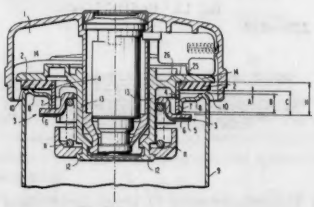
Rolf Hutzenlaub, Stuttgart, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Feb. 17, 1981, Ser. No. 234,628

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1980, 3005419

Int. Cl.[3] B65D *41/06, 41/36*

U.S. Cl. 220—295 17 Claims



1. A closure arrangement for a tank provided with a tank neck having a means for defining a bayonet-type thread, the arrangement including a tank cap means adapted to be mounted on the tank neck, a pair of tension clamp means, means for mounting the tansion clamp means so as to be axially displaceable, a closing pipe means guided in tank cap means, the closing pipe means including a flange means, and a sealing

means mounted on the flange means, characterized in that a spacer sleeve means is inserted between the flange means and the tension clamp means for maintaining a predetermined spacing between the flange means and the tension clamp means over a predetermined rotation of the tank cap means, means are provided for maintaining the spacer sleeve means stationary during a rotation of the tank cap means, and in that means are provided on the spacer sleeve means for reducing the predetermined spacing when the tank cap means is rotated to a final position whereby the sealing means is brought into contact with a sealing surface of the tank neck.

4,339,056

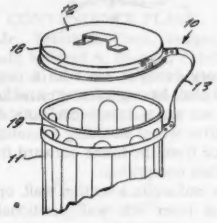
LID TIDY

Harold Berkstresser, Jr., c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg. 233 Broadway, both of New York, N.Y. 10007

Filed Nov. 3, 1980, Ser. No. 203,065

Int. Cl.³ B65D *55/16*

U.S. Cl. 220—375 **3 Claims**



1. A tethering device attached between a removable cover and refuse container of similar diameter comprising in combination a flexible elongated strap with means at opposite ends for firm securement to said cover and container, said means having flat surfaces adapted to contact said cover and container along a surface wider than the strap thickness, wherein said means comprises said ends being made into a loop shape and secured in said shape by interconnecting transverse snap fasteners one of which includes a flat tab receivable through a narrow slot into a spherical interior of a dome integral with the other said fastener, wherein said tab is integrally compressible to fit into said slot.

4,339,057

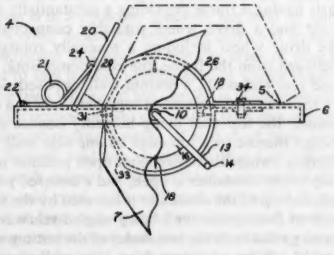
FILTER PAPER DISPENSER

David L. Winters, 13677 Brainbridge, Warren, Mich. 48089

Continuation of Ser. No. 845,594, Oct. 26, 1977, abandoned, which is a continuation of Ser. No. 696,204, Jun. 15, 1976, abandoned. This application Mar. 30, 1979, Ser. No. 25,342

Int. Cl.³ B65H *1/06, 3/22*

U.S. Cl. 221—213 **8 Claims**



1. A dispensing device for dispensing nested dished papers comprising means including a base for holding a stack of nested dished papers, said base having an opening therethrough, the dishing of said papers being such that each paper has a bottom wall and a substantially conical side wall, a paper sticking member movably mounted on said base adjacent said opening, means disposing said stack on said base so that said paper sticking member is positioned within the nearest paper of said stack of nested dished papers, means relatively moving said stack of nested dished papers and said paper sticking member so that the conical side wall of said nearest paper of said stack of nested dished papers through said opening is stuck with said paper sticking member, and means using the conical side wall and continued relative movement of said paper sticking member for pulling said paper from said stack of nested dished papers and dispensing the same.

4,339,058

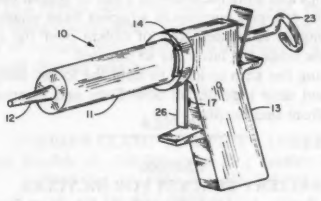
APPARATUS FOR DISPENSING MATERIAL FROM A CONTAINMENT VESSEL IN PRESELECTED MEASURED AMOUNTS

Robert J. Wendt, 743 E. Military, Fremont, Nebr. 68025

Filed Dec. 7, 1979, Ser. No. 101,211

Int. Cl.³ G01F *11/06*

U.S. Cl. 222—309 **8 Claims**



1. An apparatus for dispensing materials in measured amounts comprising:

(a) a material containment vessel having a nozzle;

(b) a rod having a first end and a second end wherein a diaphram is attached at said first end of said rod and is operably inserted into said containment vessel distal said nozzle;

(c) movement means for advancing said rod and diaphram in said containment vessel and operably attached to said rod wherein said movement means comprises a first pivot arm, a second pivot arm having a first end located adjacent to but spaced from said rod and a second opposite end, and a slideable rod engagement wherein said first pivot arm is operably connected to said first end of said second pivot arm, and said slideable rod engagement is directly connected to said second end of said second pivot arm and a handle means and wherein said movement means further comprises a ratchet and pawl;

(d) housing means attached to said movement means wherein said handle means is attached to said housing means;

(e) attachment means for attaching said containment vessel to said housing means;

(f) stop means for limiting the amount of travel of said movement means, said stop means operably attached to said movement means; and

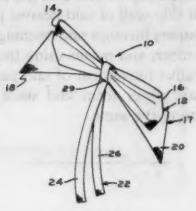
(g) spring biasing means for biasing said movement means, said spring biasing means operably attached to said movement means;

(h) an elongate member including said pawl being directly and operably attached to the first end of said second pivot arm and slideably attached to said rod.

4,339,059
DECORATIVE TIE BOW

Douglas A. Kenyon, Brimfield, Mass., assignor to Wm. E. Wright Co., West Warren, Mass.

Filed Nov. 7, 1980, Ser. No. 204,892
Int. Cl.³ A41H *43/00*; D04D *7/06*; A41D *25/02, 27/08*
U.S. Cl. 223—46 2 Claims

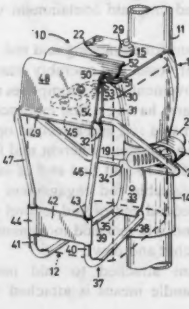


1. A bow-making process comprising:
(a) forming a convolution of ribbon and crimping the same at its center to provide a pair of oppositely extending loops;
(b) twisting and crimping another length of ribbon to form wing-like members;
(c) superimposing the wing members on the loops with the crimped portions adjacent one another by impaling both the loops and wing members on a pair of spaced needles to hold the crimped portions in adjacent fixed relationship;
(d) looping an elongated strip of ribbon over the crimped portions while the latter are so impaled;
(e) securing the strip to itself to hold the loops, wing members and strip together in bow form and removing the bows from said needles.

4,339,060
BATTERY BRACKET FOR BICYCLES

Richard L. Braida, Jr., 1104 Cherry Point Rd., West River, Md. 20881

Filed Mar. 3, 1981, Ser. No. 239,993
Int. Cl.³ B62J *11/00*
U.S. Cl. 224—32 R 12 Claims

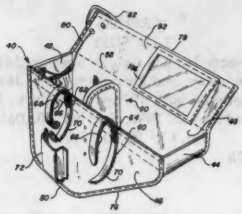


1. A support bracket for a battery mounted on a bicycle frame or the like, said bracket comprising:
(a) a generally L-shaped frame with a means for attaching the first leg of said frame to a support surface;
(b) a generally L-shaped jaw connected to said first leg, the two members in combination defining a generally rectangular space in cross-section within which a battery is secured;
(c) a latching means, depending from the free end of the jaw for releasably engaging the second leg of said frame; and
(d) a pair of spaced parallel arms arranged on each side of the rectangular space formed by the two members for restricting the lateral movement of a battery supported in said bracket.

4,339,061
ACCESSORY CASE FOR A WHEEL CHAIR

Philip Dunn, Morton Grove, Ill., assignor to Philbag Co., Inc., Chicago, Ill.

Filed Nov. 13, 1980, Ser. No. 206,352
Int. Cl.³ A45C *3/00, 13/00, 15/00*; B60R *11/00*
U.S. Cl. 224—42.42 10 Claims



1. An accessory case for use with a conventional wheel chair, the wheel chair having a frame providing a substantially horizontal arm rest and a drive wheel rotatably connected to the frame, the drive wheel including a manually rotatable ring spaced a distance from the frame outward from the arm rest; said accessory case comprising:
front and rear end walls, a bottom wall, opposed side walls including an inner side wall positionable adjacent the wheel chair arm rest and an outer side wall spaced therefrom, and a top wall interconnected together to form a covered container, the top wall extending between said side walls and being hingedly connected along one edge thereof to a top edge of the outer side wall, the top wall being swingable between an open position in which the top of the container is open, and a covered position in which the top of the container is covered by the top wall with the top wall overlying the top edge of the inner side wall and defining means to enable direct access to the interior of the case by an occupant of the chair;
said bottom wall including a substantially horizontal forward portion positionable generally forward of the drive wheel and a rearward portion angled upwardly and rearward relative to the forward portion to position the rearward portion in spaced overlying relation to the wheel chair drive wheel, the width of the container from side wall to side wall being less than the distance from the rotatable ring to the wheel chair frame; and
fastening means on the inner side wall selectively engageable with the wheel chair for mounting the container adjacent and immediately outward of the arm rest with the top wall in the closed position being substantially at the level of the arm rest.

7. An accessory case for a conventional wheel chair, the wheel chair having a frame providing a substantially horizontal arm rest and a drive wheel rotatably connected to the frame, the drive wheel including a manually rotatable ring spaced outward from the frame, the case comprising:
front and rear end walls, a bottom wall, opposed side walls and a top wall interconnected together to form a covered container, the top wall being hingedly connected along one edge thereof to a top edge of one side wall, the top wall being swingable between an open position in which the top of the container is open, and a covered portion in which the top of the container is covered by the top wall;
a portion of the bottom wall being angled rearwardly and upwardly relative to the remainder of the bottom wall and the width of the container from side wall to side wall being less than the distance from the rotatable ring to the wheel chair frame;

means on the other side wall for mounting the container on the arm rest with the top wall in the closed position being substantially at the level of the arm rest and with the portion of the bottom wall above the drive wheel; and

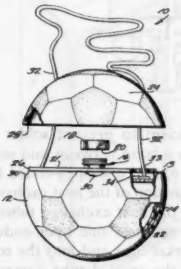
partition means connected on the interior between said side walls of the case, said partition means including two wings hingedly connected along edges thereof to the opposed side walls, the two wings being swingable around their respective hinge connections between a partition position in which the wings are fastened to one another and divide the case into two compartments and an open position in which the wings are fastened to the side walls.

4,339,062

CONVENIENCE FLASK

Frank H. Witt, Jr., Trumbull, Conn., assignor to Rosalie S. Levine, Trumbull; Mildred S. Bisacca, Fairfield and GRRN Company, Easton, all of, Conn., a part interest to each

Filed Nov. 7, 1980, Ser. No. 204,908
Int. Cl.³ B65D *25/22*
U.S. Cl. 224—148 **11 Claims**



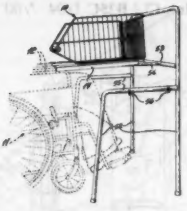
1. A flask comprising: a bottom portion defining and enclosing a volume for containing liquid; a neck extending outwardly from said bottom portion and defining an open tubular passageway in liquid communication with the liquid-containing volume of said bottom portion; removable cap means for covering said neck to prevent passage of liquid through said tubular passageway; a top portion; surface means formed on said top and bottom portions for releasably holding said top portion to said bottom portion so that said neck and cap means are covered by said top portion and not visible from the exterior of the flask with said top portion in a position held by said bottom portion, and are visible from the exterior of the flask when said top portion is in a detached position, not held by said bottom portion; a cord; means for attaching said cord to said bottom portion adjacent said neck so that the areas of attachment of said cord to said bottom portion are not visible from the exterior of the flask when said top portion is in the position held by said bottom portion; means defining at least one opening in said top portion providing passage of said cord from said bottom portion through said top portion so that said top portion is movable with respect to said bottom portion and slides with respect to said cord, with said cord maintained in association with said at least one opening receiving said cord; and said cord being dimensioned and said cord attaching means being constructed so that said cord can hang around a human being's neck and support said bottom portion resting on the human being's chest area.

4,339,063

CONTAINER BASKET FOR WHEELCHAIR

Antoine Trubiano, 1410 7th Ave., Pointe aux Trembles, Montreal, Quebec, Canada

Filed Dec. 30, 1980, Ser. No. 221,516
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—273 **11 Claims**



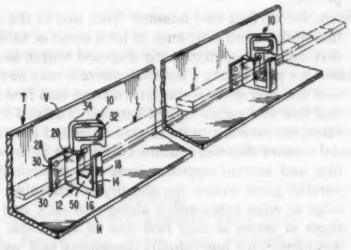
1. A container basket adapted to be transported by a wheelchair, said container comprising a bottom wall and opposed side walls defining a container area, an opening for access to said basket to permit insertion of articles on said bottom wall, two elongated channel members secured under said bottom wall and connectable to at least one side armrest of a wheelchair for supporting said basket above said armrest and forwardly of a person occupying said wheelchair, each channel member being constructed to slidingly receive and retain a side armrest of opposed side arms of a wheelchair in a respective one of said channel members.

4,339,064

CARRIER CLAMP FOR FIRE LADDERS

Theodore Ziaylek, Jr., 140 Riverview Dr., Yardley, Pa. 19067

Filed Oct. 14, 1980, Ser. No. 196,949
Int. Cl.³ B60R *9/04*
U.S. Cl. 224—324 **5 Claims**



1. A carrier clamp for fire ladders, comprising:

(a) a body having a ladder-receiving recess;

(b) means for mounting said body on a support surface of an emergency vehicle;

(c) a closure element for said recess, mounted upon the body for movement between a first position in which it closes the recess to confine the supported ladder therein, and a second position in which it is shifted clear of the recess to permit removal of the ladder; and

(d) means normally biasing the closure element toward the body when in its first position, so as to clampably engage the supported ladder therebetween, said clamp further including a spacer block adapted to be mounted in the body, within the ladder-receiving recess, whereby to adjust the size of the recess to different widths of folded fire ladders, the spacer block having a cam surface adapted to bear against a supported fire ladder so as to bias

the ladder into engagement with a sidewall of the ladder-receiving recess.

4,339,065

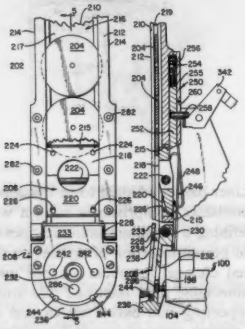
PNEUMATIC TOOL

Harry M. Haytayan, Sunnyside La., Lincoln, Mass. 01773

Continuation of Ser. No. 927,296, Jul. 24, 1978, abandoned. This application Mar. 12, 1980, Ser. No. 129,713

Int. Cl.³ B25C *1/04, 7/00*

U.S. Cl. 227—8 **16 Claims**



1. A fastener driving tool comprising:

a hollow housing having first and second opposite ends;

first end means for closing off said first end of said housing, said first end means having a first opening therein for communicating with the interior of said housing;

a hammer longitudinally disposed within said housing along an axis which extends between said first and second opposite ends and which is aligned with said first opening, said hammer being movable lengthwise within said housing and along said first opening in said first end means between a first retracted position and a second extended position;

means for driving said hammer from one to the other of its first and second positions, at least some of said means for driving said hammer being disposed within said housing;

means for positioning a fastener where it may be engaged by said hammer so as to be driven from said first opening in said first end means as said hammer is driven from its first retracted position to its second extended position; and

metal washer dispenser means comprising (a) a rack having first and second opposite ends and oppositely disposed parallel guide means for slidably constraining washers in edge to edge relationship along said rack and delivering them in series at said first end of said rack, (b) a gate mechanism for individually dispensing said washers from said first end of said rack, and (c) a holder adjoining said first end of said rack and adapted to receive said washers from said rack and releasably hold said washers one at a time in front of said first opening by means of at least one magnet attached to said holder, said holder also being provided with a central aperture for alignment with said first opening in said first end means and able to pass a fastener therethrough.

4,339,066

ULTRASONIC DIP SOLDERING PROCESS

Gerald N. Matthews, and Frank H. Sanders, both of Tyler, Tex., assignors to General Electric Company, Louisville, Ky.

Filed Apr. 7, 1980, Ser. No. 137,709

Int. Cl.³ B23K *1/06, 1/08*

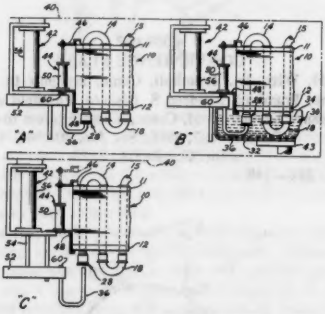
U.S. Cl. 228—183 **8 Claims**

1. The method of relieving the interior air pressure of a heat exchanger fluid circuit of a heat exchanger coil during a soldering operation, the circuit including a plurality of heat exchange tubes having open ends connected by return bends prefitted into the open ends and the circuit terminating in open-ended tubular members having an inner surface wherein the return bends are immersed in a bath of molten solder, the method comprising the steps of:

arranging the heat exchanger coil on a conveyor means;

providing a snorkel tube having one end dimensioned to be inserted in one of said open-ended tubular members;

inserting said one end of said snorkel tube in said one open-ended tubular member, the inserted end of the snorkel tube having an outer diameter smaller than the inside diameter of said one open-ended tubular member so that a circumferential space is provided between the inserted end of said snorkel tube and the inner surface of said one open-ended tubular member and maintaining said circumferential space between an inserted length of said snorkel tube and the inner surface of said one open-ended tubular



member sufficient to prevent solder from bridging the space to form a bond between said snorkel tube and said inner surface of said one open-ended tubular member;

immersing the portion of the heat exchanger coil having the open ends of the heat exchange tubes with the prefitted return bends and said one open-ended tubular member with said snorkel tube end into the solder bath with the other end of the snorkel tube communicating with the atmosphere, relieving the internal pressure in the circuit, thereby enabling the molten solder to flow into the joints between heat exchange tubes and the return bends while continuing to maintain said circumferential space;

removing the immersed portion of the heat exchanger coil from the solder bath;

moving said snorkel tube relative to said one open-ended tubular member so that said one end of said snorkel tube is removed from said one open-ended tubular member; and

removing said heat exchanger coil from said conveyor means.

4,339,067

TRIANGULAR PRISMATIC CARTON

Dorothy K. Bessey, Charlotte, N.C., assignor to Rexham Corporation, Charlotte, N.C.

Filed Dec. 30, 1980, Ser. No. 221,447

Int. Cl.³ B65D *5/06, 5/10*

U.S. Cl. 229—22 **3 Claims**

1. A display carton in the shape of a generally triangular prism, comprising:

(a) two rectangular first and second side panels and a rectangular bowed front panel, all having the same length;

(b) the first side panel being articulated to the second side panel along respective first lengthwise edges at an angle of less than 180°, forming an interior within the side panel, having the same length;

(c) a rectangular indent panel, having the same length as but

a lesser width than the first side panel articulated along a first lengthwise edge to the first side panel's second lengthwise edge;

(d) the indent panel lying on the interior surface of the first side panel;

(e) said front panel articulated along a first lengthwise edge to the second lengthwise edge of indent panel;

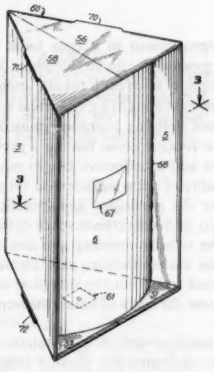
(f) a rectangular closure panel, of the same length as but a lesser width than the second side panel, articulated along a first lengthwise edge to the second lengthwise edge of the second side panel and lying on the inside surface of the second side panel,

(g) said front panel being of a width greater than the shortest straight line distance between the second lengthwise edge of the indent panel and the second lengthwise edge of the closure panel;

(h) a rectangular closure tab, at the same length as but having a width no greater than the closure panel, articulated along a lengthwise edge to the second lengthwise edge of the front panel;

(i) the closure tab engaging the closure panel to limit the outward displacement of the front panel within the carton;

(j) top and bottom triangular end flaps articulated to the first



side panel along its widthwise edges, substantially filling the triangular area deliminted by adjoining widthwise edges of the side panels;

(k) top and bottom triangular bracing panels articulated to the second side panel along its widthwise edges and completely covering the triangular area, lying on the outside surfaces of the top and bottom end flaps;

(l) said bracing panels having one score line each running the entire distance across the bracing panels and bisecting the angle between the side panels;

(m) tip and bottom bracing flaps articulated to front edges of the bracing panels, substantially covering the triangular area and lying on the inside surfaces of the bracing panels;

(o) said bracing flaps having one score line each running the entire distance across the bracing panels and aligned with the score lines in the bracing panel;

(p) said bracing flaps engaging the side panels to prevent the displacement of the bracing flaps;

(q) first positioning tabs articulated to the widthwise edges of the closure panel and lying between the end flaps and the bracing flaps;

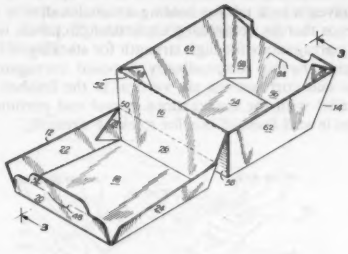
(r) second positioning tabs articulated to the widthwise edges of the indent panel and lying between the end flaps and the bracing flaps.

4,339,068

PAPERBOARD FOOD CARTON

Arne H. Brauner, Peekskill, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,715
Int. Cl.³ B65D *5/24*
U.S. Cl. 229—33 **8 Claims**



1. A food carton formed from a unitary blank of foldable paperboard comprising:

a bottom tray; a top cover; means to connect said bottom tray to said top cover; and means on said bottom tray and said top cover to securely close said carton;

said bottom tray comprising:

a base wall; a front wall; a rear wall; and a pair of side walls, each such wall hingedly connected to, and extending from, said base wall;

said top cover being dome-shaped and comprising:

a top wall; a front wall; a rear wall; and a pair of side walls, each such wall hingedly connected to, and extending from, said top wall;

said connecting means comprising:

a floating hinge panel pivotable about and connected by a first score line to the outer edge of the rear wall of said bottom tray and pivotable about and connected by a second score line to the outer edge of the rear wall of said top cover, said floating hinge panel being adapted to permit said top cover to substantially overlie, cover, and extend to the base wall of said bottom tray when the carton is in the closed position, and to pivot about said first and second score lines to open the closed carton and thereby to place the base wall of the bottom tray and the top wall of the top cover in the same horizontal plane to form two food serving compartments.

4,339,069

UNITARY KNOCKDOWN FILE BOX

Wendell A. Poteet, Fort Worth, Tex., assignor to O'Grady Containers, Inc., Fort Worth, Tex.

Filed Aug. 19, 1980, Ser. No. 179,508
Int. Cl.³ B65D *5/22*
U.S. Cl. 229—36 **3 Claims**

1. A storage box used for a file container or the like comprising:

a single piece, corrugated cardboard blank that is foldable into a completed configuration that has openable and closable top without requiring strings, latches, latch buttons and the like;

said blank including two outer side walls, each side wall having hingedly connected at respective ends via foldable creases respective fold-over end portions that have respective interlocking tabs for allowing said end portions to be folded into position and locked with said tabs to facilitate additional folding into a finished box,

said end portions having corrugations traversing longitudinally upwardly from said bottom in the finished box position;

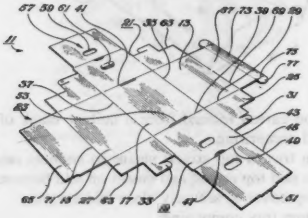
bottom hingedly connected with said two sides at their bottoms with a foldable crease;

two respective box ends having respective inner and outer portions and hingedly connected at a respective inner end of said inner portions to said bottom by a foldable crease;

each said box end having adjacent its midpoint a lock aperture and a 180° foldable crease such that its inner and outer portions can fold over and encompass said respective end portions of said sides and leave said lock aperture exposed to received a lock tab for holding a top closed;

said ends thereby comprising triple strength panels with vertical corrugations for high strength for stacking;

said ends having longitudinally disposed corrugations such that said corrugations are vertical in the finished box and parallel with the corrugations in said end portions of said sides in said finished box for stacking strength;



said ends having respective lifting means for lifting said box, each lifting means in said ends comprising mating apertures in each respective pair of said inner and outer portions of said ends and a cut out recess in said end portions of said sides,

said cut out recess also providing space for receiving a lock tab of a foldable flap of a top panel;

two respective oppositely disposed top panels hingedly connected respectively at one end with the respective tops of respective said side walls by a foldable crease;

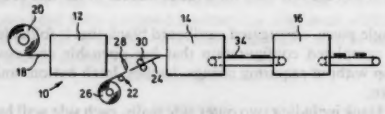
one of said top panels having a foldable flap adapted to fold over the free end of the oppositely disposed top panel, said foldable flap having hingedly connected at each end by a foldable crease a lock tab adapted to be lockingly inserted within said lock aperture and said cut out recess of said ends for holding said top closed and being lifted from said lock aperture for easy opening of said top panel to allow access to the interior of said storage box as infrequently desired.

4,339,070

CARTON HAVING INTEGRALLY FORMED SUPPLEMENTARY COMPONENTS

Frank H. Davies, Toronto, Canada, assignor to Lawson Paper Converters Limited, Scarborough, Canada

Filed Aug. 1, 1980, Ser. No. 174,646
Int. Cl.³ B65D 5/46
U.S. Cl. 229—52 B **19 Claims**



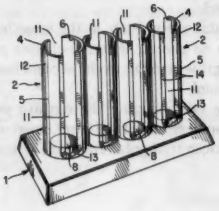
1. A carton including a pair of planar members adapted to overlie one another, one of said planar members having first and second portions interconnected by at least one deformable connection, an abutment edge on each of said portions, said edges being arranged in spaced relationship to permit relative movement between said first and second portions, a reinforcing tape adhered to said one planar member and completely overlying said first portion and extending onto the inner periphery of said second portion, an aperture formed in the other of said planar members to permit access to said first portion and restraining means acting between said planar members to prevent separation thereof whereby upon a force being applied to said one portion, said connection deforms and permits relative movement between said first and second portions.

4,339,071

COIN BANK

A. Douglass Hall, David's Hill Rd., Bedford Hills, N.Y. 10507

Filed Jun. 10, 1980, Ser. No. 158,219
Int. Cl.³ A47G 29/00
U.S. Cl. 232—5 **10 Claims**



1. The improvement in a coin bank having a support, a plurality of generally tubular members upstanding from one side of the support with each tubular member including a base and top at opposite ends of a cylindrical wall with an inner wall surface thereof defining a predetermined cross-sectional area configured to receive coins having a preselected lesser cross-sectional area and an effective height equal to the height of a stacked plurality of coins sufficient to fill a standard coin wrapper suited for the particular denomination of coins to be received therein, and a clearance space defined by the inner wall surface of the tubular member and the circumference of the stack of coins stored therein, said clearance space having a width sufficient to permit the insertion of a wrapper into the tube and around the stack of coins, the improvement characterized in that:

(a) the cylindrical wall of each tubular member includes at least two diametrically located longitudinally extending slots extending at least the full height of the stacked coins from the bottommost coin to the top of the tubular member so that upon insertion of the wrapper into the tube, the wrapper can be grasped through said diametrically opposed slots and pressed into holding relationship with the bottommost coin.

4,339,072

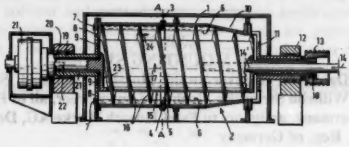
CENTRIFUGE FOR SEPARATING SOLIDS/LIQUIDS MIXTURES

Georg Hiller, Vilsbiburg, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Oct. 17, 1980, Ser. No. 197,943
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942451; Sep. 27, 1980, 3036550
Int. Cl.³ B04B 1/20
U.S. Cl. 233—7 **39 Claims**

1. A centrifuge for separating solids/liquids mixtures, comprising: a centrifuge drum having a drum housing as an outer jacket and a rotating body substantially within the drum having separating means associated therewith; aperture means in the jacket for at least partially discharging at least one concentrated solids phase therethrough; at least one control device means connected to the rotating body for periodically opening and closing said aperture means as the rotating body rotates relative to the drum; drive means for rotating the rotating body relative to the drum; and the control device means comprising

means for movement past the aperture means in the rotating direction of the rotating body at a given interval in a closing position to effectively block the aperture means for a signifi-



cant small period of time to prevent discharge at the aperture means, the interval being sufficiently small to prevent any substantial flow through the aperture means.

4,339,073

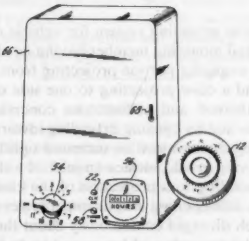
ENERGY CONSERVING THERMOSTAT

Arthur Staloff, 9 Hollis Rd., East Brunswick, N.J. 08816

Filed Sep. 24, 1979, Ser. No. 78,104

Int. Cl.³ F23N *5/20*; G05D *23/00*

U.S. Cl. 236—46 R **3 Claims**



1. An apparatus for controlling the supply of energy in a heating zone and recording any excess supply of the energy, when required in said zone, comprising:

(a) a day thermostat allowing a temperature necessary for normal comfort conditions during an occupancy period;

(b) a night thermostat allowing a temperature necessary for a maintenance of said zone during a non-occupancy period;

(c) a seven-day timer clock calibrated for time of each day with manually adjustable pins on said clock to set a time interval on each day during which normal comfort conditions with the day thermostat are required;

(d) a mechanical switch means responsive to the pins of said clock;

(e) an electrical switch means including a relay energized by an operation of said mechanical switch means; and

(f) an override timer including a time clock meter and a manually operable switch to increase the time on any given day when a usual supply of energy is required in said zone; said time being recorded on the time clock meter.

4,339,074

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE IN GREENHOUSES

Jim A. Nissmo, Repslagarevägen 8; Jan A. Sundin, Travvägen 14, both of S-245 00 Staffanstorp, and Lars B. Sjöström, Södra Parkgatan 39, S-214 22 Malmö, all of Sweden

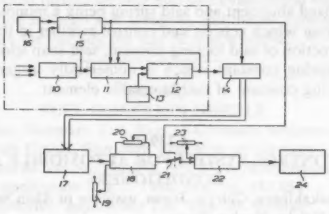
PCT No. PCT/SE79/00203, § 371 Date Jun. 11, 1980, § 102(e) Date Jun. 10, 1980, PCT Pub. No. WO80/00648, PCT Pub. Date Apr. 17, 1980

PCT Filed Oct. 10, 1979, Ser. No. 195,419

Claims priority, application Sweden, Oct. 11, 1978, 7810611

Int. Cl.³ A01G *9/00*; G05D *23/00*

U.S. Cl. 236—47 **4 Claims**



1. A method of controlling the temperature in greenhouses wherein the nominal value of the temperature is adjusted between a higher daytime temperature and a lower night temperature, comprising the steps of measuring the sunlight intensity inciding into the greenhouse, activating a sunlight energy measuring means when the inciding sunlight intensity exceeds a predetermined level and deactivating the sunlight energy measuring means when the inciding sunlight intensity falls below said predetermined level, measuring the sunlight energy inciding into the greenhouse when the sunlight energy measuring means is activated, connecting an adjusting means to a temperature regulator for a greenhouse heating unit when said sunlight intensity falls below said predetermined level and disconnecting said temperature regulator adjusting means from said temperature regulator when said sunlight intensity exceeds said predetermined level, and causing said adjusting means to adjust said greenhouse heating unit to a higher night temperature when said sunlight energy measuring means measures a higher sunlight energy quantity and to a lower temperature when said sunlight energy measuring means measures a lower sunlight energy quantity.

4,339,075

BIMETALLIC-CONTROLLED STEAM TRAP

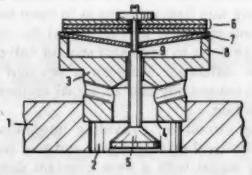
Friedrich Schittek, Stuhr, and Volkmar Jahn, Bremen, both of Fed. Rep. of Germany, assignors to Gustav F. Gerdts KG and Gestra-Ksb Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft, both of Bremen, Fed. Rep. of Germany

Filed Jan. 16, 1981, Ser. No. 225,829

Claims priority, application Fed. Rep. of Germany, Jan. 23, 1980, 3002294

Int. Cl.³ F16T *1/08*

U.S. Cl. 236—59 **3 Claims**



1. In a steam trap of the type having a valve seat, a fixed

abutment, a control member including a bimetallic element disposed on the prepressure side of said valve seat and a stroke-movable locking element which cooperates with the valve seat and is biased in an opening direction with respect to the valve seat by the prepressure, wherein said bimetallic element has one side disposed for cooperative engagement with said locking element so as to urge the same in a closing direction with respect to the valve seat and an opposite side by which it is supported, and at least one spring supported on said fixed abutment and disposed for cooperative engagement with said control member which executes a stroke movement in the direction of the stroke axis of said locking element, the improvement comprising:

said bimetallic element being supported on its other side on a fixed abutment and said spring being a monostable snap spring which acts on said control member in the opening direction of said locking element, said snap spring having a spring constant which is numerically larger than the spring constant of said bimetallic element.

4,339,076

CONTROL SYSTEM FOR AUTOMOBILE AIR CONDITIONERS

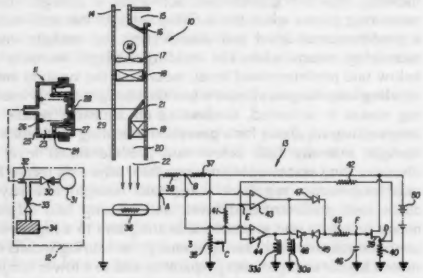
Naoji Sakakibara, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 11, 1980, Ser. No. 129,477

Claims priority, application Japan, Mar. 16, 1979, 54-31374

Int. Cl.³ G05D *23/00*; B60H *3/00*

U.S. Cl. 236—84 **4 Claims**



1. A control system for an automobile air conditioner comprising:

an air blend door for adjusting the output of the air conditioner;

a vacuum actuator including a hermetic chamber and a control member, said control member being connected to control said air blend door proportionally to the pressure within said chamber;

a vacuum modulator including a first valve for exhausting air from said chamber to a vacuum reservoir;

a second valve for admitting air from atmosphere to said chamber and a restriction member arranged at the entrance side of said chamber;

a control circuit for providing a first electrical driving signal for operating said first valve so as to open said first valve and a second electrical driving signal for operating said second valve so as to open said second valve proportionally to the difference between a selected temperature within said automobile and an actual temperature within said automobile;

an integrating circuit for providing integrated outputs of said first electrical driving signal and said second electrical driving signal with a time constant determining the volume of said chamber and the diameter of said restriction wherein said first electrical driving signal and said second electrical driving signal are integrated by a time constant corresponding to ventilation resistances of the volumes of said chamber and said restriction member; and

a feedback loop for applying said integrated outputs to the input of said control circuit.

4,339,077

RAIL MOUNTING SYSTEM

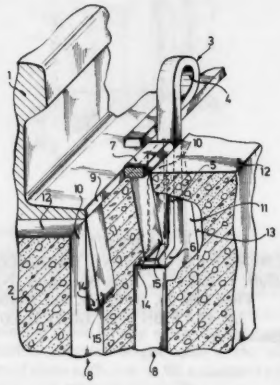
Peter Dahlhaus, Radevormwald; Horst E. Steinfeld, Schwerte, and Wilhelm Striepeke, Bochum-Langendreer, all of Fed. Rep. of Germany, assignors to Estel Hoesch Werke AG, Dortmund, Fed. Rep. of Germany

Filed Oct. 2, 1980, Ser. No. 193,173

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1979, 2944725

Int. Cl.³ E01B *9/30*

U.S. Cl. 238—349 **8 Claims**



1. A resilient mounting system for vehicle rails, comprising at least one rail mounting member having an elongated shaft, a resilient rail engaging portion projecting from an upper end of said shaft and a claw projecting to one side of said shaft at a lower end thereof; and at least one concrete tie having an upper surface and an opening extending inwardly thereof, said opening being dimensioned to surround tightly said shaft and claw and having at said surface an inlet of a shape and dimension corresponding to a projection of the claw perpendicular to said shaft, said opening also having a lower end and a cross-section which diverges continuously about the shaft thickness from said inlet towards said lower end in direction transverse to the elongation of said claw, said fastener being removable for replacement of ties, said rails being resiliently connected to said ties.

4,339,078

TANK CAR COATING APPARATUS

Charles Ford, McCall Creek; Arthur Gill, Jr., Bude; John W. Smith, Meadville, and Louis L. Freeman, Jr, Bude, all of Miss., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,552

Int. Cl.³ B05B *15/02*

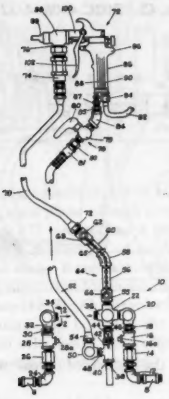
U.S. Cl. 239—1 **13 Claims**

1. Coating apparatus comprising:

first conduit means for carrying an inert solvent containing a coating material to be reacted into a mixing chamber;

second conduit means for carrying a liquid activator in a particulate state to be reacted with the coating material into said mixing chamber; third conduit means for carrying an inert solvent for said coating material and activator into said mixing chamber; said coating material and said activator being fed into a mixing chamber into intimate

contact in said mixing chamber; said mixing chamber being provided with agitating means for obtaining effective mixing of the coating material with the agitator; fourth conduit means for feeding the mixed coating material, solvent and activator into a coating applicator gun; valve means in said third conduit means for preventing flow of said inert solvent into said mixing chamber during said coating operation and allowing flow of inert solvent into said mixing chamber after said coating operation; fifth



conduit means extending from said valve means and connected to a rear portion of said gun for carrying inert solvent into the rear portion of said gun; said gun comprising means for applying the mixed coating material and activator onto a container or transportation vehicle; second valve means in said fifth conduit means for preventing flow of said inert solvent into said rear portion of the gun during said coating operation and allowing flow of inert solvent into said gun after said coating operation.

4,339,079

FRAGRANCE EMITTER

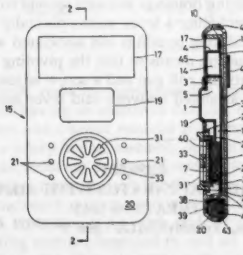
Osamu Sato, 3-148-5 Aratacho, and Masahiro Shibagaki, 2-3-23 Minatocho, both of Hyogo-ku, Kobe, Japan

Filed Feb. 3, 1981, Ser. No. 231,096

Claims priority, application Japan, Jul. 11, 1980, 55-98460[U]

Int. Cl.³ A61L *9/12*

U.S. Cl. 239—43 **4 Claims**



1. A device for emitting a fragrant scent, comprising a container adapted to receive a fragrant liquid, said container including walls forming a front wall and a back wall and said walls forming a reservoir portion and a chamber portion which is below said reservoir portion and an open flow passage between said reservoir portion and said chamber portion allowing for relatively unimpeded flow of liquid between said reservoir and chamber portions, said reservoir and chamber portions and said passage having a single piece construction, a housing which encloses said container therein, said housing having an opening therein which exposes said front wall of said reservoir portion, and said housing further having at least one window adjacent said front wall of said chamber portion, said front wall of said reservoir portion being substantially transparent and said front wall of said chamber portion being pierceable by a needle or pin inserted through said window, a liquid absorbent member filling said chamber portion, an evaporation sheet tightly fitted between said window and said front wall of said chamber portion, the liquid in said chamber portion impregnating said absorbent member and seeping through holes formed by piercing said front wall of said chamber portion, said liquid further seeping into said evaporation sheet and being emitted through said window, and means connected to said housing for varying the size of said window.

4,339,080

FUEL INJECTION NOZZLE

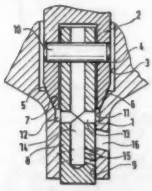
Odon Kopse, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 946,271, Sep. 27, 1978, abandoned. This application Sep. 2, 1980, Ser. No. 183,554

Claims priority, application Fed. Rep. of Germany, Nov. 4, 1977, 2749378

Int. Cl.³ F02M *61/00*

U.S. Cl. 239—533.3 **4 Claims**



1. A fuel injection nozzle for internal combustion engines having a nozzle body with a control bore and a fuel exit;

a valve needle extending within the control bore toward the fuel exit;

a piston on said valve needle and arranged in a fluid-tight fit within the control bore of the nozzle body in the vicinity of the fuel exit, wherein said valve needle and piston are displaced against the direction of fuel flow through a given stroke within the control bore relative to the fuel exit; and

a channel in said piston which serves to carry fuel;

the improvement wherein at least one injection port is located in the piston in communication with said channel, and the fuel exit defines a control opening located in the nozzle body, said control opening having a larger cross-section than said at least one injection port and serving to control the opening and closing of said at least one injection port during the stroke of the valve needle and piston; and

wherein the nozzle body defines a valve seat within the control bore and wherein the piston extends downstream of the valve seat.

4,339,081

LIQUID FLOW CHANNEL

Lars A. Lindqvist, Sigtuna, Sweden, assignor to Spar Vatten Och Energi AB, Sigtuna, Sweden

PCT No. PCT/SE79/00045, § 371 Date Nov. 2, 1979, § 102(e) Date Nov. 2, 1979, PCT Pub. No. WO79/00690, PCT Pub. Date Sep. 20, 1979

PCT Filed Mar. 1, 1979, Ser. No. 187,840

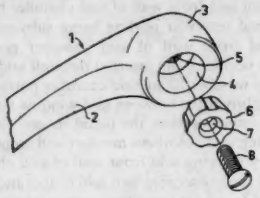
Claims priority, application Sweden, Mar. 2, 1978, 7802369

Int. Cl.³ B05B *1/18*

U.S. Cl. 239—552 **7 Claims**

1. A shower nozzle having a plurality of side-by-side flow

channels for liquid, each flow channel having an inlet end and an outlet end and having a length substantially exceeding its width, the transverse cross-section of the flow channel being



oblong along essentially its whole length and having a greater width and height in the area of the inlet and outlet ends than in the intermediate area between said ends.

4,339,082

RAPID TRANSIENT ELECTROINJECTOR

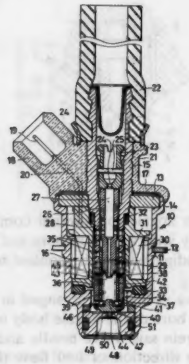
Dario Radaelli, Legnano, and Walter Giraudi, Milan, both of Italy, assignors to Alfa Romeo S.p.A., Milan, Italy

Filed Jul. 29, 1980, Ser. No. 173,326

Claims priority, application Italy, Aug. 3, 1979, 24927 A/79

Int. Cl.³ B05B *1/30*

U.S. Cl. 239—585 **5 Claims**



1. An electroinjector for delivering intermittent feeds of fuel at low pressure to an internal combustion engine of the Otto cycle, the electroinjector comprising an outer casing, a feed duct for the low pressure fuel, at least one injection nozzle, a valve member for said nozzle, and an operating coil provided with a core in the form of a ferromagnetic hollow cylinder, said coil being arranged to cylically control the opening of said valve member by the effect of suitable control signals, said feed duct for the pressurised fuel being disposed inside said core, said valve member forming the coil armature and being in the form of a cup having a lateral wall of ferromagnetic material and a base wall of a material suitable for sealing the low pressure fuel, resilient means within said cup and urging said base wall into contact with the injection nozzle, a guide sleeve within said core and projecting into said cup, said cup being slidably supported by said guide sleeve, said coil being wound on a spool inside which said coil core and said cup are partly received and aligned in an axial direction, between the core and cup there being present a first annular air gap which corresponds to the cup stroke and is therefore variable, between the lateral wall of the cup and an outer casing there being present a second annular air gap of fixed thickness, wherein in the electroinjector said first air gap and said second air gap have a reluctance of substantially equal value when the first air gap corresponds to the maximum stroke of said cup.

4,339,083

APPARATUS FOR THE GRINDING OF CEREAL

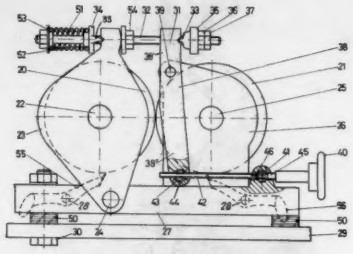
Robert Linzberger, Abtwih; Leendert Ketting, Oberuzwil, and Ernst M. Heer, Zuzwil, all of Switzerland, assignors to Gebrueder Buehler AG, Uzwil, Switzerland

Continuation of Ser. No. 1,071, Jan. 5, 1979, abandoned, which is a continuation of Ser. No. 815,559, Jul. 14, 1977, Pat. No. 4,140,285. This application Apr. 21, 1980, Ser. No. 141,903

The portion of the term of this patent subsequent to Feb. 20, 1996, has been disclaimed.

Int. Cl.³ B02C *4/06, 4/32*

U.S. Cl. 241—37 **25 Claims**



1. A roller mill for the milling of cereal or the like comprising:

a main base frame arranged to be mounted on the floor of a mill house;

first and second mill rolls;

a pair of fixed bearing housings supported on said main base frame to carry said first mill roll;

a pair of movable bearing housings supported on said main base frame to carry said second mill roll and adjustable loading means operative between said fixed bearing housings and said movable bearing housings to contain the separating forces acting on said mill rolls in operation of the mill; independently from said main frame;

said adjustable loading means having a tie member;

first roll gap adjusting means arranged between said fixed and movable bearing housings and second roll gap adjusting means operatively interposed between said first roll gap adjusting means and said tie member;

said fixed and movable bearing housings being respectively mounted on said tie member independently of said main base frame and said tie member being supported on said main base frame, said first roll gap adjusting means including a loading member arranged between said fixed and movable bearing housings and said second roll gap adjusting means including a lever means pivotally mounted on one of said bearing housings and associated with said first roll gap adjusting means so that the pivoting of said lever means adjusts the roll gap and a screw adjustment device operatively arranged between said lever means and said tie member.

4,339,084

PULP REFINING APPARATUS WITH ADJUSTABLE TREATING GAP

Erik F. Eriksson, YmsenvUMLa/ gen 9*l*, S-121 42 *Johanneshov, Sweden*

PCT No. PCT/SE79/00104, § 371 Date Dec. 28, 1979, § 102(e) Date Dec. 17, 1979, PCT Pub. No. WO79/01002, PCT Pub. Date Nov. 29, 1979

PCT Filed Apr. 27, 1979, Ser. No. 178,462

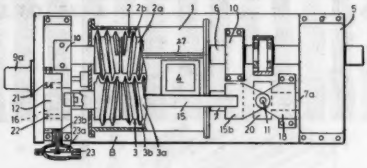
Claims priority, application United Kingdom, Apr. 28, 1978, 17034/78

Int. Cl.³ B02C *18/16*

U.S. Cl. 241—37 **10 Claims**

1. Apparatus of the type used for treating cellulose pulp,

comprising two intermeshing rotary screws (**2, 3**) having shafts (**6, 7**) associated therewith and driven synchronously within housing (**1**) having a material inlet (**4**) and a material outlet (**8**), said screws being provided with mutually intermeshing screw-thread sections (*2b, 3b*) compressively treating and conveying material from the inlet to the outlet at a high dry-matter concentration of at least 12.5% and preferably at least 25%, one end of at least one screw shaft (**7**) comprising a bearing (**17**) and being pivotally mounted relative to at least one output shaft



(*7a*) for pivotal swinging movement of at least one screw (**3**) in a common central axial plane of both screws, the opposite end of said screw shaft (**7**) comprising a bearing (**16**) and being supported for lateral movement of said opposite end in said plane towards and away from said other screw shaft **6**, said bearing (**16**) being supported for movement in said plane under the control of means (**12, 21, 22, 23**) selectively determining the width of the treating gap between the intermeshing screw-thread sections and selectively controlling the treating conditions to which the material is exposed.

4,339,085

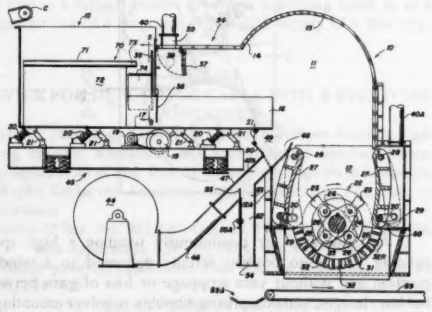
REVERSIBLE MATERIAL REDUCING MILL

Robert M. Williams, 16 La Hacienda, Ladue, Mo. 63124

Filed Apr. 14, 1980, Ser. No. 139,844

Int. Cl.³ B02C *13/288*

U.S. Cl. 241—62 **7 Claims**



1. In material reducing apparatus for handling trash and waste material having an enclosure defining an upper material mixing portion and a lower material reducing portion in communication, a rotary impact assembly operably mounted in said lower material reducing portion of said enclosure, an air flow conduit having a discharge end, the discharge end opening into said upper enclosure mixing portion, a material chute having an open end communicating with said air flow conduit, air flow generating means connected to said air flow conduit for moving air through said conduit into said upper mixing portion of said enclosure, and primary trash and waste material feeding means having a discharge end opening into said upper mixing portion adjacent said air flow conduit discharge end, the improvement comprising: means forming a pocket disposed beneath said discharge end of said primary feeding means and at one side of said air flow conduit discharge end; and air flow velocity control means operable in said air flow conduit between said air flow generating means and said pocket, said control means restricting the cross-section of said air flow conduit to create air flow velocity with a consequent creation of a negative pressure gradient in said pocket for causing material passing off said discharge end of said feeding means to enter into said pocket at a velocity to effect specific gravity separation of material such that high specific gravity material falls against the air flow into said material chute and the lesser specific gravity material is propelled in the air stream flowing into said upper mixing portion of said enclosure.

4,339,086

GRINDING PAN BEARING ARRANGEMENT AND DRIVE OF A ROLLER MILL

Horst Brundiek, Neuss, Fed. Rep. of Germany, assignor to Loecshe GmbH Company, Dusseldorf, Fed. Rep. of Germany

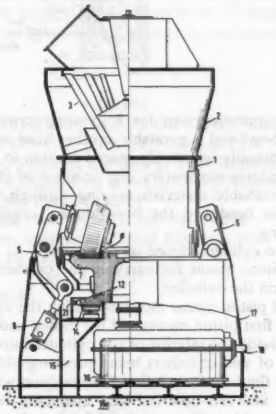
Continuation of Ser. No. 870,092, Jan. 17, 1978, Pat. No. 4,218,023. This application May 21, 1980, Ser. No. 151,930

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1977, 2703535

The portion of the term of this patent subsequent to Aug. 19, 1997, has been disclaimed.

Int. Cl.³ B02C *15/00*

U.S. Cl. 241—121 **6 Claims**



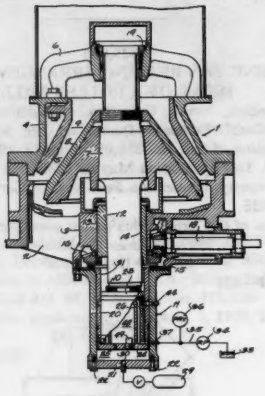
1. A roller mill of the type having a housing structure supported on a foundation, a substantially horizontal grinding pan supported for rotation about a substantially vertical mill axis, at least one grinding roller supported by pivotable journals for rolling contact on the grinding pan, means to pivot the rotational axis of the roller to move the roller into and out of engagement with the grinding pan, and driving means below the grinding pan to rotate the grinding pan, comprising, the grinding pan having a horizontal pan section and an integral substantially vertical depending section, a support ring in contact with the lower end of said depending section and having a larger diameter than said depending section to extend radially therebeyond, at least three hydrostatic bearings symmetrically arranged for supporting said support ring at said radially extending location for coaxial rotation with said grinding pan, at least three radial hydrostatic bearings symmetrically arranged to guide said support ring radially, each bearing being adjustably mounted on a base support element of the housing structure so that they distribute the entire load of the grinding operation through the grinding pan, support ring, and base support elements to the foundation, said base support elements being radially outwardly spaced with respect to said mill axis so that said driving means is readily accessible when in operating position.

4,339,087

CRUSHER HEAD SUPPORTING UNIT FOR A GYRATORY CRUSHER

Robert J. Pollak, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Sep. 8, 1980, Ser. No. 184,633
Int. Cl.³ B02C 2/04
U.S. Cl. 241—211 10 Claims



1. A supporting unit for a gyratory crusher including a crusher bowl and a gyratable crusher head supported by the unit in normally selectively spaced realtion to the bowl which accommodates momentary displacement of the crusher head by noncrushable materials moving through the crusher between the head and the bowl during crushing operations, comprising:

a piston cylinder closed on one end;

first piston means for carrying the crusher head mounted within the cylinder;

second piston means mounted within the cylinder between said first piston means and the closed end of the cylinder to divide the interior of the cylinder into two chambers, one of said chambers being prechargeable with pressurized fluids to form a first fluid cushion within said chamber, and the other of said chambers being selectively chargeable with pressurized fluids to form a second fluid cushion operatively associated with said first fluid cushion for positioning said first piston means carrying the crusher head within the cylinder;

said second piston means enclosing a pressure relief chamber and having valve means providing fluid communication between said one chamber and the pressure relief chamber; and

said valve means accommodating one-way flow of fluids from said one chamber into the pressure relief chamber attendant to displacement of the crusher head by noncrushable materials and attenuated flow of fluids from the pressure relief chamber into said one chamber during movement of the crusher head back to its normal operating position.

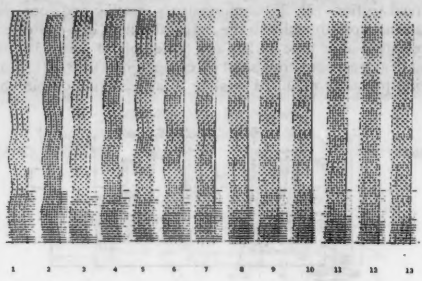
4,339,088

EMBOSSING METHOD TO AVOID NESTING IN CONVOLUTELY WOUND ROLLS AND PRODUCT

William P. Niedermeyer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Apr. 7, 1980, Ser. No. 137,599
Int. Cl.³ B65D 85/67, 85/671; B31B 1/14
U.S. Cl. 242—1 17 Claims

17. A convolutely wound roll comprising web material wound on itself and having a pattern of embossments arranged in a repeat pattern, said repeat pattern having a length at least equal to the circumference of the finished roll and wherein the embossments of any top convolutely wound web sheet will be



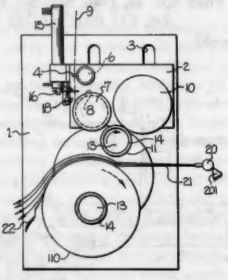
substantially displaced from the embossments of the underlying sheet.

4,339,089

YARN WINDING APPARATUS AND METHOD

Donald J. Dobbins, Waxhaw, N.C., assignor to Barmag Barmer Maschinenfabrik AG, Remscheid, Fed. Rep. of Germany

Filed Nov. 24, 1980, Ser. No. 209,372
Int. Cl.³ B65H 54/06, 67/04
U.S. Cl. 242—18 A 10 Claims



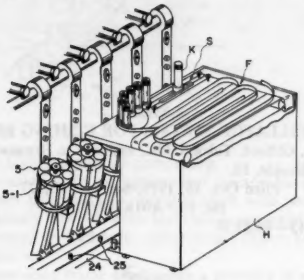
1. An apparatus for continuously winding a high speed running yarn onto bobbins serially delivered to a winding position and without yarn stoppage or loss of yarn between bobbin changes, and comprising a bobbin revolver mounting at least one bobbin receiving chucks, means for sequentially rotating the bobbin revolver so as to bring an empty bobbin mounted one chuck to a winding position while moving a full bobbin mounted on another chuck from the winding position to a doffing position, means for traversing the yarn in a traverse plane across the bobbin which is in the winding position, means for rotatably driving the bobbin in the winding position, and yarn changeover means for transferring the running yarn being wound on a full bobbin to a position wherein the yarn may be caught by an empty bobbin which is moved to the winding position and so as to sever the yarn and commence winding the running yarn onto the empty bobbin, the improvement wherein said yarn changeover means includes air jet means for restraining the outward radial movement of the severed yarn end which extends from the rotating full bobbin, so as to prevent the same from contacting and becoming entangled with the empty bobbin then being wound at the winding position.

4,339,090

COP SUPPLYING METHOD FOR AUTOMATIC WINDING MACHINE

Isamu Matsui, Kyotoshi, and Buro Suganuma, Nagaokakyoshi, both of Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Division of Ser. No. 928,599, Jul. 27, 1978, Pat. No. 4,212,333.
This application Jul. 14, 1980, Ser. No. 168,023
Claims priority, application Japan, Jul. 29, 1977, 52-92081
Int. Cl.[3] B65H *54/20, 67/06*
U.S. Cl. 242—35.5 A 3 Claims



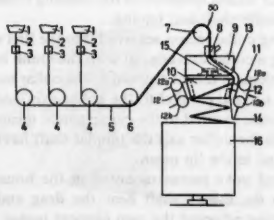
1. A method for transferring and supplying cops to an automatic winding machine having a plurality of winding units including the step of providing a magazine including magazine cans with each unit, driving a cop supplying truck in front of the winding units and along a train of magazines and feeding cops contained on the cop supplying truck to the magazines one by one, characterized by running the supply truck continuously, positioning on a conveyor device of the supply truck a plurality of cylindrical cop containers without bottom plates which contain a cop errected vertically therein, and feeding the cop in a falling manner from the supplying truck in to a magazine can of a magazine requiring a supply of a new cop.

4,339,091

DEVICE FOR DEPOSITING CABLE INTO A RECEIVING CONTAINER

Heinrich Enneking, Karlsruhe; Günter Schubert, Malsch; Ludwig Hauger, Karlsruhe, and Rolf Mladek, Bruchsal-Untergrombach, all of Fed. Rep. of Germany, assignors to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft, Fed. Rep. of Germany

Division of Ser. No. 953,120, Oct. 20, 1978, Pat. No. 4,304,366.
This application Apr. 21, 1981, Ser. No. 256,008
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1977, 2747706
Int. Cl.[3] B65H *54/76, 51/20*
U.S. Cl. 242—47 8 Claims



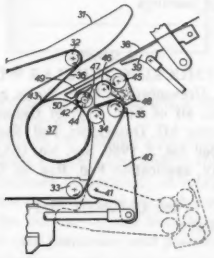
1. A chemical-fiber cable depositing device comprising:
a rotatable distributor including a rotatable cable distributing tube extending obliquely downwardly along the distributor and having a top end with a cable inlet disposed adjacent the center of rotation of said distributor tube and having a bottom end with a cable discharge disposed at a location spaced radially outwardly of said cable inlet;
a rotatable cable receiver located adjacent said distributor tube in a position to receive cable directly therefrom and having a plurality of guide slots therein, whereby the cable is wound around said receiver;
drive means to effect driving rotation of one of said distributor and said receiver relative to the other and to effect a deposit of coils of cable from the relative rotation and feeding of cable out of said outlet onto said receiver;
a receiving container disposed below said receiver in a position to receive the cable which is wound around said receiver;
and pusher means adjacent said receiver engageable with the cable as it is wound around said receiver and effective to push the cable downwardly along said receiver and off of said receiver into said container;
said pusher means comprising an outer support member disposed radially outwardly of said receiver, and a plurality of outer rotary members rotatable mounted to said support member each having at least one pusher pin connected thereto and movable in a direction of deposit of the coils, each said at least one pusher pin being movable into a respective guide slot of said receiver for keeping said receiver from rotating with respect to said support member.

4,339,092

ROTARY CUTTER FOR SHEET OR STRIP MATERIAL AND ITS USE IN A BELT WRAPPER

David C. Benoy, Swanage, and George T. F. Kilmister, Christchurch, both of England, assignors to Loewy Robertson Engineering Co. Ltd., Poole, England

Filed Nov. 19, 1979, Ser. No. 94,211
Claims priority, application United Kingdom, Nov. 21, 1978, 45385/78; Nov. 21, 1978, 45386/78
Int. Cl.[3] B65H *19/20*
U.S. Cl. 242—56 R 9 Claims



7. A belt wrapper for starting a coil of sheet or strip material issuing from a sheet or strip processing plant, comprising:
a spool arranged to contact a portion of the periphery of said spool about which the strip material is to be wound, and moved in a direction which draws the leading portion of the strip around the spool; and
a rotary cutter arranged to lie adjacent the periphery of the spool outside the portion contacted by the belt, the rotary cutter comprising:
a roller, having an air-pervious surface;
means alternatively apply negative and positive air pressure to that portion of the air-pervious surface adjacent the spool periphery;
at least one longitudinally disposed knife mounted in the roller; and
means to intermittently cause the knife to project radially

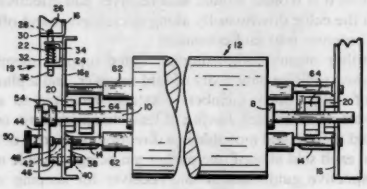
from the roller and cut said material when held over the adjacent portion of the roller by negative air pressure; whereby when negative pressure is applied the material is cut by the knife and discarded from the spool and, when positive pressure is applied, the material follows the periphery of the spool to form a coil.

4,339,093

PNEUMATIC ROLL LIFTER

Frank G. Shanklin, Groton, Mass., and Francis X. King, Nashua, N.H., assignors to Shanklin Corporation, Ayer, Mass.

Filed Nov. 24, 1980, Ser. No. 209,395
Int. Cl.³ B65H *19/30, 17/02;* **B21C** *47/24*
U.S. Cl. 242—58.6 **25 Claims**



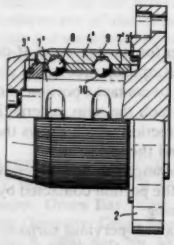
1. Apparatus for loading a roll of sheet material wound on a core onto supporting bearings for unwinding comprising a spindle, aligned bearings for rotatably receiving the ends of the spindle, means supporting the bearings with one bearing stationary and the other movable to an out-of-alignment position, and lifting means situated below the line of centers of the bearings for engaging the ends of the spindle of a roll supported below the bearings in a position of axial displacement with respect to the stationary bearings for lifting the roll to a position in which the axis of the spindle is above the level of the line of centers of the bearings, said movable bearing being thereafter movable to bring it into alignment with the stationary bearing beneath the spindle when the latter has been lifted to said level above the line of centers of the bearings and said lifting means being operable to lower the ends of the spindle onto said aligned bearings.

4,339,094

DEVICE FOR CHUCKING TUBULAR WINDING CORES

Karl Thievessen, Grevenbroich; Peter Weiss, and Knut Welkers, both of Neuss, all of Fed. Rep. of Germany, assignors to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 3, 1980, Ser. No. 165,901
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929934
Int. Cl.³ B65H *75/24*
U.S. Cl. 242—68.2 **1 Claim**



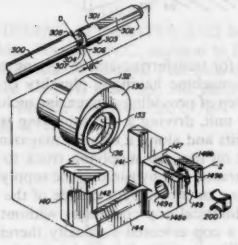
1. In a device for chucking tubular winding cores of the type wherein chucking segments forming a cylindrical surface are radially positioned by a core trunnion having an equilateral polygonal cross section, each of said chucking segments bearing on an individual surface of said trunnion through a support member having a rounded profile and producing a line contact, the improvement wherein: the support members comprise rollable balls and means mounting same between the chucking segments and the core trunnion with substantially no play comprising conical recesses in the inner circumference of the chucking segments configured to receive the balls to make contact with only the side walls thereof with substantially no play, tracks in the surface of the core trunnion for receiving the balls and a cage for the balls disposed coaxially between the chucking segments and the core trunnion for free rotation and receiving said balls with substantially no free play.

4,339,095

OSCILLATOR SYSTEM FOR FISHING REEL

Richard L. Gifford, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Oct. 18, 1979, Ser. No. 85,927
Int. Cl.³ A01K *89/01*
U.S. Cl. 242—84.21 R **18 Claims**



1. In a spinning reel having a housing with a front spool end, a back drag assembly end and first and second side bearings, a pinion assembly mounted in the housing and defining a central axis, a center shaft coaxially slidably mounted in the pinion assembly and having a front end projecting forward of the housing's spool end and a drag end projecting into the housing, a spool mounted on the front end of the shaft, a crank handle shaft and gear train assembly including a tubular shaft comounted in the second side bearing substantially perpendicular to a vertical plane containing the central axis and operable with the pinion assembly causing a rotor mounted on the pinion assembly to revolve winding fishing line about the spool, the spool reciprocating forward and backward as fishing line is wound thereon to even out the fishing line package, improved reciprocating means being an oscillator mechanism comprising:

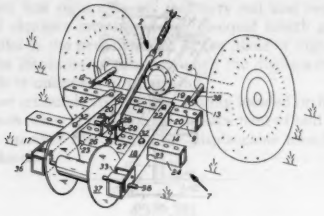
(1) oscillator means mounted in the housing rotatable by the crank handle shaft and having:
  (a) bearing collar means received into the first side bearing having a collar axis coaxial with the crank handle shaft,
  (b) cam element means secured to the collar means having a cam surface parallel to the collar axis, and,
  (c) lip means secured to the cam element means and coaxial with the collar axis the tubular shaft having one end mounted in the lip means;
(2) open end yoke means mounted in the housing and secured to the center shaft near the drag end, the yoke means being adjacent the cam element means and in substantially constant contact therewith; and,
(3) rotation of the oscillator means about the collar axis supplies a pre-selected reciprocating motion to the spool relative to the rotation of the rotor about the spool to provide a pre-selected line package.

4,339,096

CABLE LAYING APPARATUS

Amos May, P.O. Box 964, Alvin, Tex. 77511

Filed Jan. 7, 1981, Ser. No. 223,222
Int. Cl.³ B65H 75/40
U.S. Cl. 242—86.5 R 18 Claims



1. Cable laying apparatus comprising

the combination with an agricultural tractor having a rear three-point hydraulically operated hitch with two laterally spaced jointly movable arms and a single separately movable arm operated by hydraulic motor means driven by the tractor engine, of

a cable supporting frame comprising a plurality of supporting members of hollow steel tubing arranged in a rectangular frame,

one of said supporting members extending crosswise at the rear of said tractor and including means removably connected to said two jointly movable arms of said three-point hitch,

two of said supporting members being adjustably supported on said cross-wise member in spaced relation at selected points thereon and extending rearwardly therefrom,

each of said rearwardly extending members having a notch in the upper surface at the rear end thereof for supporting the shaft or axle of a spool of wire to be carried thereon, and

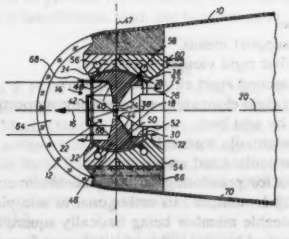
a second supporting member extending cross-wise of said rearwardly extending members at points intermediate the ends thereof and adjustably secured thereto in parallel relation to said first named cross-wise member and including means connecting the same to said single movable hitch arm.

4,339,097

TARGET SEEKING HEAD FOR A MISSILE

Hans Kordulla, Singen; Hans H. Gerlach, Owingen, and Dirk Jansen, Überlingen, all of Fed. Rep. of Germany, assignors to Bodenseewerk Geratetechnik GmbH, Überlingen, Fed. Rep. of Germany

Filed May 22, 1980, Ser. No. 152,202
Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921228
Int. Cl.³ F41G 7/22
U.S. Cl. 244—3.16 7 Claims



1. Target seeking head for a missile, comprising:

a gyro rotor mounted for rotation about a spin axis, which rotor is mounted in the missile for angular movement of its spin axis with two degrees of freedom, and a target field scanning device with an optical system arranged on the gyro rotor, and a central, stationary detector,

characterized in that

(a) the gyro rotor (18) has a convex calotte-shaped peripheral surface (28),

(b) this surface (28) is surrounded by a concave calotte-shaped bearing surface (30) substantially concentric thereto and stationary with respect to the missile, while forming a narrow air gap (32), and

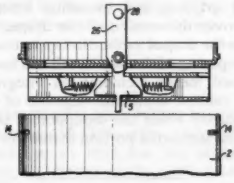
(c) pressurized gas conduits (34,36) open into the bearing surface (30), through which conduits pressurized gas is permitted to be introduced into the air gap (32) for centered air bearing of the gyro rotor (18), freely movable to all sides.

4,339,098

RELEASE MECHANISM FOR AIRCRAFT RELEASED LOADS

Jacques Tardot, Gond Pontouvre, and Roger Lambert, Soyaux, both of France, assignors to L'ETAT FRANCAIS, represente par le Delegue General pour l'Armement, Paris, France

Filed Feb. 21, 1980, Ser. No. 123,405
Int. Cl.³ B64D 17/38
U.S. Cl. 244—151 B 6 Claims



1. A release mechanism for separating a storage container from a parachute comprising:

a parachute container for holding a parachute;

means for attaching a storage container to the bottom of said parachute container comprising: an attachment component having one end extending through a centrally located opening in the bottom of said parachute container for connecting to said parachute, said parachute providing a tension to said attachment component when deployed;

linear slide means located on the bottom of said parachute container, said slide means having at least one horizontally movable end for engaging an opening in said storage container, said slide means being biased into engagement by a catch on the remaining end of said attachment component when tension is applied to said one end;

means for maintaining tension on the one end of said attachment component until deployment of said parachute, said means for maintaining tension comprising a lever having one end pivoted to said attachment component, the remaining end of said lever being attached to the connecting lines of said parachute, said lever having a diameter less than said centrally located opening, and being pivoted into horizontal position with respect to said container bottom, whereby said storage container remains fixed to the bottom of said parachute container until tension is relieved from said attachment component.

4,339,099

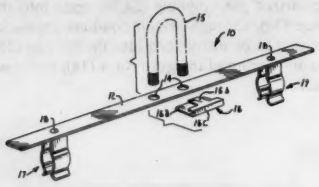
DEVICE FOR HOLDING AND SPREADING TRASH BAGS

C. Dickinson Barton, 236 W. 54th St., Kansas City, Mo. 64112, and Glen Maurer, Regent's Walk Apartments, 91st & Riggs La., Apt. 9115, Shawnee Mission, Kans. 66212

Continuation-in-part of Ser. No. 854,609, Nov. 25, 1977, abandoned. This application Oct. 4, 1979, Ser. No. 81,900

Int. Cl.³ B65B *67/04*

U.S. Cl. 248—101 **9 Claims**



1. Apparatus for supporting above ground or floor level and simultaneously spreading and holding spread a substantial portion of the bag wall at the mouth of a flexible bag so that the unsupported portion of the bag wall adjacent the mouth can be drawn away from the supported and spread portion thereby to open the mouth of the bag for reception of material, said apparatus comprising, in combination,

an elevated support member located above ground or floor level and having a bag draping surface over which a portion of the exterior bag wall adjacent the bag mouth can be draped and conformed thereto with a substantial portion of the bag wall in surface to surface contact with the bag draping surface, and

combined bag gripping and spreading means having parts engageable over the outside of the draped surface to grip and maintain the draped surface in support contacting condition during opening of the bag mouth and loading of the bag, said combined means including an integral spreader bar operable to cause a substantial segment of the bag wall to remain stationary when the unsupported portion is drawn away from the supported portion thereby to open the mouth of the bag.

4,339,100

ARRANGEMENT AT A STAND FOR AN OPTICAL OBSERVATION DEVICE

Rudolf Heller, and Walter Schindler, both of Zurich, Switzerland, assignors to Contraves AG, Zürich, Switzerland

Filed Jul. 10, 1980, Ser. No. 167,538

Claims priority, application Switzerland, Jul. 24, 1979, 6848/79

Int. Cl.³ F16L *3/00*; A47G *29/00*

U.S. Cl. 248—123.1 **6 Claims**

1. An arrangement at a stand for an optical observation device, comprising:

a stand column;

a pivotal arm mounted at said stand column;

a counterweight provided for said pivotal arm;

a support arm cooperating with said pivotal arm;

hinge parallelogram means cooperating with said support arm;

a plurality of rotary and brake bearings provided for said stand;

said hinge parallelogram means being structured at its front region for receiving an optical observation device;

said pivotal arm having opposed ends;

a guide lever pivotably mounted at one end of the pivotal arm for pivotable movement about a first horizontal axis;

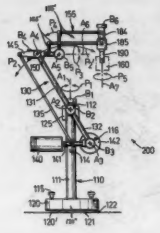
a weight disk arranged at the other end of the pivotal arm at a second horizontal axis;

one of said rotary and brake bearings being arranged at the other end of said pivotal arm at said second horizontal axis;

a rod member secured to said one brake bearing;

said rod member supporting said counterweight;

said rod member extending transversely with respect to said



second horizontal axis and essentially parallel to said guide lever;

a thrust rod for operatively connecting said rod member with said guide lever; and

said thrust rod extending essentially parallel to said pivotal arm.

4,339,101

DEVICE FOR DISPLACING A MEMBER, PRIMARILY A STAGE FOR OPTICAL INSTRUMENTS, IN ARBITRARY DIRECTIONS IN ONE AND THE SAME PLANE

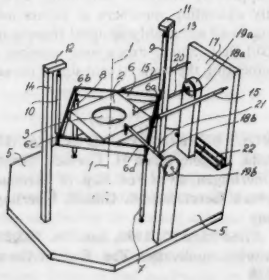
Leon Carlson, Lievägen 16, S-183 38 Täby, Sweden

Filed Jan. 12, 1981, Ser. No. 224,391

Claims priority, application Sweden, Jan. 22, 1980, 8000491

Int. Cl.³ F16M *11/04*; G02B *7/00*

U.S. Cl. 248—178 **3 Claims**



1. A device for displacing a displaceable member in two arbitrary directions in one and the same plane, said device comprising

(a) a base,

(b) two support means,

(c) two first rigid elongate members,

(d) two second rigid elongate members,

said second rigid elongate members being supported each at one end by said base,

(e) a substantially square frame,

(f) two articulate rod members, and

(g) means for preventing said displaceable member from rotating around an axis orthogonal to said plane,

said displaceable member being basically square and being circumscribed by said substantially square frame and having each of its corners engaging the central portion of a respective side of the square frame,

each of said first rigid elongate members being suspended at

one end by a respective one of said support means and being at the other end secured to a respective corner of said square frame, said respective frame corners being located diagonally with regard to each other,

each of said second rigid elongate members supporting at the second end a respective remaining corner of said square frame, said remaining corners also being located diagonally with regard to each other,

said two first rigid elongate members and said two second rigid elongate members being of equal length and being parallel to the perpendicular of the plane of displacement of the displaceable member when the displaceable member is in quiescent position, and

said two articulate rod members being located orthogonally to each other in the plane of displacement of said displaceable member for causing the displaceable member to be displaced.

4,339,102

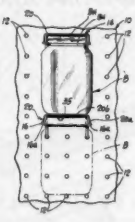
READILY SEPARABLE JAR MOUNTING DEVICE

Earl O. Schweitzer, 29353 Luxona Rd., Wickliffe, Ohio 44092

Filed Apr. 18, 1980, Ser. No. 141,384

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—221.1 **14 Claims**



1. A one piece mounting device formed of plastic for mounting a necked container to a generally vertically oriented board support comprising a generally resilient, C-shaped, in plan, base, adapted to receive and hold the neck of a container for assembly of the container to the mounting device, upon generally linear movement of the container in the direction of the open portion of the C, and permitting disassembly of the container from the device upon reverse generally linear movement of the container, and means projecting laterally outwardly of said base for coupling said base to a board support, and wherein said base is adapted for generally horizontal orientation on a board support, with the open portion of the C facing outwardly for receiving the neck portion of the container, the distance between the distal ends of the arms of the C being less than the transverse distance across the neck of the associated container, whereby the arms of the C-shaped base are forced outwardly during the insertion and/or removal of the container from the mounting device, the closed portion of the C being of predetermined generally minimum width dimension and adapted to provide for mounting of the container close to but without interference with the board support.

4,339,103

DEVICE FOR ADJUSTING INCLINED ANGLE OF SEATING SURFACE OF SEAT CUSHION

Mamoru Mori, Okazaki, and Takami Terada, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Jun. 5, 1980, Ser. No. 156,627

Claims priority, application Japan, Jul. 26, 1979, 54/103418[U]

Int. Cl.³ A47C *1/025*

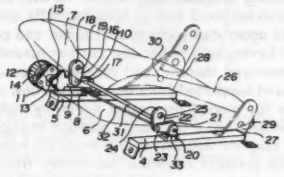
U.S. Cl. 248—397 **5 Claims**

1. A device for adjusting the inclined angle of the seating surface of the seat cushion of an automotive seat having a pair of seat slide adjusting units disposed at both sides and secured to seat slide upper rails, said device comprising:

a sector gear plate so journaled at the rear portion thereof at a fulcrum at the position corresponding to the front side position of the seat cushion frame of the one seat slide adjusting unit and including teeth formed at the front face thereof,

a handle mounted through a first bracket at the seat slide adjusting unit;

a pinion gear with a non-reversing unit to be rotated by said handle and engaging in mesh with the teeth of said gear plate to allow said gear plate to elevationally rock upon rotation of said pinion gear,



a first link pivotally secured at an intermediate portion between the rear portion and the front teeth of said gear plate and pivotally secured at the upper portion thereof to the seat cushion frame,

a second bracket so journaled at the other seat slide adjusting unit as to rock in substantially the same manner as said gear plate,

a second link pivotally secured to said second bracket in substantially the same orientation as said first link at the lower portion thereof and pivotally secured at the upper portion thereof to the seat cushion frame, and

means for pivotally securing the seat cushion frame at the rear end thereof to both the seat slide adjusting units.

4,339,104

FLOOR STAND MOUNTED MIRROR

Marilyn V. Weidman, 615 Clifford St., Allentown, Pa. 18103

Filed Apr. 23, 1980, Ser. No. 143,088

Int. Cl.³ F16M *11/00*; A47F *7/14*

U.S. Cl. 248—407 **4 Claims**

1. A floor stand mounted mirror construction, said construction including an upright standard having upper and lower relatively telescoped and slidably adjustable end portions, the

lower end of the lower end portion including a horizontally enlarged floor engaging base, retention means operatively connected between the upper and lower end portions for releasably preventing downward movement of said upper end portion relative to said lower end portion from said selected extended positions of said upper end portion relative to said lower end portion, a support frame, means mounting said support frame on the upper end portion of said standard for angular adjustment about an upstanding axis relative to said standard, a mirror mounting frame supported from said support frame for angular displacement about a horizontal axis, said mirror mounting frame including at least one mirror element thereof generally paralleling the axis of angular adjustment of said mirror mounting frame relative to said support frame, said upper end portion being cylindrical, said retention means including longitudinally spaced downwardly inclined and facing ratchet teeth spaced longitudinally along one side, only, of said upper end portion, said lower end portion being tubular and having said upper end portion rotatably and telescopingly received therein, said retention means further including a pawl supported from one wall portion of said lower end portion for guided oscillation generally radially of said wall portion between a first inner position engaged with said teeth when said one side and wall portion are registered and a second outer position retracted outwardly from said teeth, means operatively connected between said pawl and lower end portion yieldingly biasing said pawl toward said first position, said pawl and lower end portion including coacting structure operative to selectively releasably lock said pawl in said first and second positions, said upper end portion being rotatable relative to said lower end portion to angularly displace said one side out of registry with said one wall portion, said upper end portion, exclusive of said one side being smooth, whereby when said one side is angularly displaced out of registry with said one wall portion said upper end portion may be longitudinally shifted, in either an up or down direction, relative to said lower end portion even when said pawl is yieldingly biased into engagement with said upper end portion.

4,339,105

CLAMP FOR SECURING LARGE CAN-TYPE CAPACITORS TO A CIRCUIT CHASSIS

Eugene F. Witt, Lake Hopatcong, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 16, 1980, Ser. No. 159,943
Int. Cl.[3] A47B *97/00*
U.S. Cl. 248—500 **5 Claims**

1. A clamping arrangement to secure a can-type electrical component to a base plate surface comprising,

first and second tie rods, each having a cross-section with a width substantially greater than its thickness and further including T-shaped tine means at one end and clamping means at an end opposite the one end,

the clamping means comprising a nodule to engage an edge or lip of the electrical component, a hinge means about which the nodule is fulcrumed and fastening means to apply clamping force about the hinge means

the clamping means including a first member connected to the tie rod and to the hinge means, a second member connected to the hinge and including the nodule and the fastening means including a threaded hole in the first member, a hole in the second member and a screw to join the second member to the first member by passing through the hole and engaging the threaded hole and applying pressure to secure the nodule in the second member to an edge of the can-type electrical component, and

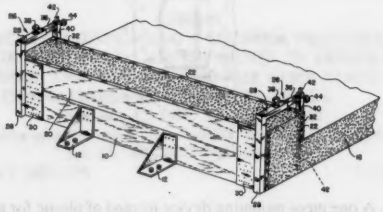
first and second slots precut into the base plate surface, each slot having a width less than a width of the tine means, and a longitudinal dimension greater than a width of the tine means, the longitudinal dimension being positioned so that it is located almost substantially entirely under the body of the can-type electrical component after it is positioned on the base plate surface leaving only sufficient longitudinal dimension outside the electrical component to accommodate the thickness of the clamping means engaged with the slot.

4,339,106

REUSABLE BRACKET ASSEMBLY FOR CONCRETE FORM

Ramon Navarro, 10138 E. Rush St., El Monte, Calif. 91733

Filed Jul. 31, 1980, Ser. No. 174,036
Int. Cl.[3] E04G *17/04, 17/06, 17/12*
U.S. Cl. 249—219 R **3 Claims**



1. A bracket assembly for supporting and bracing a pair of spaced and parallel wooden form members during the pouring of a concrete tilt-up panel on a horizontal base, a bracket assembly including: a first plate and a second plate adapted respectively to be affixed to the wooden form members; a U-shaped support bracket for supporting the first and second plates in upright vertical positions spaced and parallel from one another, said U-shaped supporting bracket including a horizontally disposed elongated member and first and second vertically disposed elongated members mounted at opposite ends of said horizontally disposed elongated member, said first vertically disposed elongated member being inextensible and being long enough to engage said horizontal base and to hold said horizontally disposed elongated member above said base, said second vertically disposed elongated member having a first portion substantially shorter than said first vertically disposed elongated member, said first plate being attached to said first vertically disposed elongated member and said second plate being attached to said first portion of said second vertically disposed elongated member, and said second vertically disposed elongated member having a second portion extensible to said base.

4,339,107

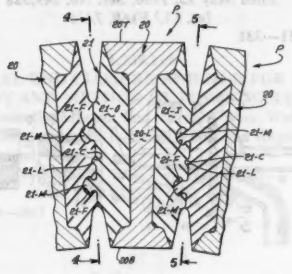
WELL BLOWOUT PREVENTER PACKER ASSEMBLY AND PACKER MODULES THEREFOR

Steven L. Schroder, Buena Park, Calif., assignor to Oil Tool Molded Products, Inc., Anaheim, Calif.

Filed Aug. 17, 1981, Ser. No. 293,685
Int. Cl.[3] B65D *53/00;* **E21B** *33/06*
U.S. Cl. 251—1 B **9 Claims**

1. In a well blowout preventer packer, the combination

comprising a plurality of reinforced elastomer modular elements, individually molded, for defining a central opening when the elements are assembled together in a side-by-side relationship in a substantially circular arrangement to function as a well blowout preventer packer, the circular arrangement of the modular elements being secured together mechanically without any additional bonding, each of the plurality of elements being similarly defined, each element being constructed and defined in a wedge-like fashion and with each modular element including a reinforcing member extending substantially vertically in the element with an elastomeric material being bonded and molded to the reinforcing member to opposite sides thereof, one side of the element having the elastomeric material constructed and defined with radially extending interlocking means and the opposite sides of the element having the elastomeric material constructed and defined with a radially extending complementary interlocking means, the complementary interlocking means extending essentially the



entire lengths of said sides and being adapted to interfit with one another, one side of the elastomeric material including a locating locking means arranged at a preselected location intermediate the ends of each section and the opposite elastomeric material having a complementary location locking means at a corresponding location intermediate the ends of the elements, the modular elements being assembled by sliding said interlocking means of one element along the complementary interlocking means of an another element until the locating locking means of one element locks into place at the complementary locating locking means of the another element whereby when the elements are all assembled together in a circular arrangement, the wedge-like shape of the elements in combination with the lengths of the interlocking channels and interlocking elements prevent the elements from moving inwardly and downwardly and the secured locating locking means prevents the elements from normally moving outwardly.

4,339,108

ACTUATOR FOR REMOTELY OPERATING A MOVING MECHANISM

Philip M. Daniluk, P.O. Box 1391, Edmond, Okla. 73034

Filed May 5, 1980, Ser. No. 146,598

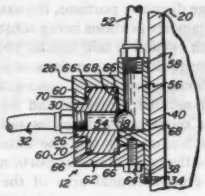
Int. Cl.³ F16K *31/122*

U.S. Cl. 251—58 **19 Claims**

1. A fluid powered actuator for remote control of rotating mechanisms, comprising:

(a) first and second means, each for at least partially defining a common fluid reservoir, wherein the first and second means are joined for relative rotation, the second means including an annular channel-defining housing having an open outer circumference and a circumferential wall opposite from the open side, wherein the circumferential wall partially defines the reservoir, the channel-defining housing further having at least one flange partially closing the open side of the channel and overlapping a portion of the first means, and the first means including an annular ring-shaped body at least partially receivable in the channel in a position overlapped by said flange and having a circumferentially inward face further defining the reservoir in combination with said opposite circumferential wall of the channel-defining housing;

(b) means for attaching said first means, in use, to a supply of fluid;



(c) means for receiving fluid into said common reservoir, in use, from a supply of fluid;

(d) means for attaching said second means, in use, to a fluid powered motive means; and

(e) means for conducting fluid, in use, between said common reservoir and motive means.

4,339,109

ELECTROMAGNETICALLY OPERATED VALVE UNIT

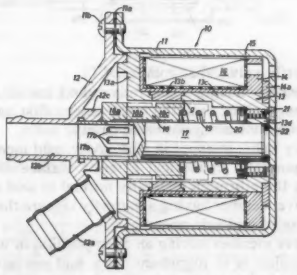
Shoji Kawata, Okazaki, and Kazutaka Kuwana, Toyota, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Apr. 3, 1980, Ser. No. 136,826

Claims priority, application Japan, Apr. 4, 1979, 54-44097[U]; Apr. 6, 1979, 54-46209[U]

Int. Cl.³ F16K *31/06*; H01F *7/08*

U.S. Cl. 251—129 **2 Claims**



1. In an electromagnetically operated valve unit for controlling the quantity of fluid flow in proportion to an electric current applied thereto, said valve unit comprising:

a casing of magnetic material having inlet and outlet ports;

a support shaft of non-magnetic material fixed in position within said casing and having an axial bore in open communication with one of said inlet and outlet ports and an axial hole formed in the peripheral wall of said axial bore to provide fluid communication between said inlet and outlet ports;

a plunger of magnetic material in the form of a sleeve member axially movable on said support shaft and cooperating with the axial hole of said support shaft to open and close the fluid communication;

resilient means for biasing said plunger in one direction to normally close the axial hole of said support shaft;

a tubular yoke assembly including a pair of tubular members of magnetic material and an annular member of non-mag-

netic material concentrically arranged with said support shaft and facing at their inner circumferences the outer circumference of said plunger with a predetermined annular clearance; and

a solenoid coil wound around said tubular yoke assembly to be energized by the electric current;

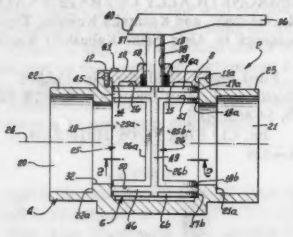
the improvement wherein said plunger includes a pair of large diameter portions and a small diameter portion between the large diameter portions, the axial length of each of the large diameter portions being substantially equal to the axial length of each of said tubular yoke members, and wherein the large diameter portions of said plunger face the inner circumference of said yoke assembly with said predetermined annular clearance and are formed respectively at their outer circumferences with a plurality of grooves in such a manner that the outer circumference area of each of the large diameter portions is substantially equal to the cross-sectional area of the small diameter portion.

4,339,110

BUTTERFLY VALVE

Robert Ortega, Rancho Mirage, Calif., assignor to Purex Corporation, Lakewood, Calif.

Continuation-in-part of Ser. No. 116,033, Jan. 28, 1980, Pat. No. 4,278,109. This application Nov. 3, 1980, Ser. No. 203,414
Int. Cl.³ F16K 5/04
U.S. Cl. 251—309 **1 Claim**



1. A butterfly valve, that comprises

(a) a valve body having a generally cylindrical cavity defining a longitudinal axis, the body having first and second ports communicating with said cavity,

(b) a rotary valve member in said cavity, said member having a generally cylindrical exterior surface and a side opening therethrough generally normal to said axis,

(c) the valve member having a butterfly closure that extends crosswise of said side opening,

(d) the valve member having an open position in which said side opening is in alignment with said ports with said butterfly closure in edgewise flow passing alignment with said ports to pass fluid flow through said side opening, and the valve member having a closed position in which said side opening is also in alignment with said ports but with said butterfly closure in flow blocking relation to said ports to block fluid flow through said side opening,

(e) said valve member including upper and lower circular sections which are axially spaced apart, the member having legs interconnecting said sections, said closure extending between said legs, said legs extending longitudinally at diametrically opposite sides of said valve member,

(f) and seal means sealing off between said valve member and said valve body and about said sections and along said legs, the valve member containing grooving receiving said seal means about said sections and along said legs, the seal means including first and second rings about said sections and longitudinal branches interconnecting said rings, said rings and branches having generally rectangular cross sections, the branches associated with said legs, the rings received in grooves in said sections but projecting therefrom and the branches received in grooves in said legs but projecting therefrom,

(g) said valve body having longitudinally spaced first and second ends, there being a valve handle proximate one of said ends, and longitudinally extending stem interconnecting said handle with one of said sections, the stem extending through said first end of the valve body, said first end including a cap in slidable engagement with one of said sections in axially spaced relation to the ring associated with said section,

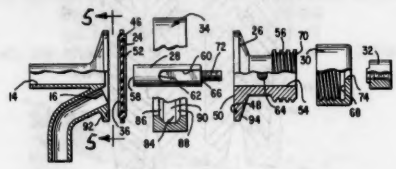
(h) said legs having widths greater than the thickness of said closure, and the legs projecting widthwise beyond planes defined by opposite faces of the closure.

4,339,111

CLEAN IN PLACE DIAPHRAGM VALVE

Elmer S. Welch, Silver Lake, Wis., assignor to Superior Stainless, Inc., Delavan, Wis.

Filed May 13, 1980, Ser. No. 149,328
Int. Cl.³ F16K 7/16
U.S. Cl. 251—331 **10 Claims**



1. A diaphragm valve comprising;

a valve body portion including a fluid inlet and a fluid outlet in fluid communication with a valve chamber, said fluid inlet being centrally disposed within said valve body portion and said fluid outlet being radially spaced from said fluid inlet within said valve body portion;

wall means surrounding said fluid inlet within said valve chamber, including a first diaphragm seating surface adapted to maintain said fluid inlet and said fluid outlet in fluid separation when a diaphragm is sealed against said first diaphragm seating surface to close the valve;

a second diaphragm seating surface on said valve body portion surrounding said fluid inlet and said fluid outlet to prevent passage of fluid into or out of said valve except through said fluid inlet or fluid outlet when said valve is operatively assembled to seal said diaphragm against said second diaphragm seating surface;

a flexible diaphragm disposed over said valve chamber to define said valve chamber between an inner surface of said diaphragm and an interior surface of said valve body portion;

a bonnet disposed to compresss said diaphragm against said second diaphragm seating surface, including means for maintaining said diaphragm in sealing engagement against said second diaphragm seating surface surrounding said fluid inlet and fluid outlet, said bonnet including an aperture for receiving a valve stem, said bonnet aperture including a transverse stop member extending into said aperture for contact against a valve stem stop surface;

a valve stem axially disposed with respect to said fluid inlet, said valve stem including a longitudinal groove extending from one longitudinal end thereof over a portion of the valve stem length to form a stop wall in said valve stem for contact against said stop member when said valve stem is axially adjusted to sealingly engage said diaphragm against said first diaphragm seating surface to achieve a valve closed position;

said valve body portion including a dished interior valve chamber surface in which said fluid outlet is disposed, said dished surface tapered inwardly toward said wall means,

said fluid outlet being disposed in said dished surface to completely span said dished surface between said second diaphragm seating surface and a base of said wall means; and

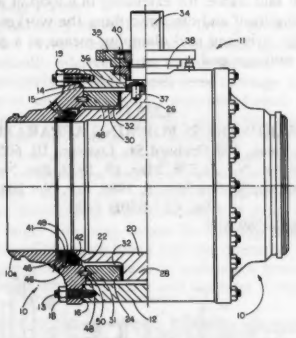
a U-shaped clamp adapted to compressingly engage an exterior surface of said valve body portion and an exterior surface of said bonnet to compress said valve body portion and said bonnet toward each other against said diaphragm to sealingly engage said diaphragm against said second diaphragm seating surface.

4,339,112

INTEGRAL END CLOSURE AND HUB FOR VALVE BODY AND METHOD OF FORMING SAME

Walter L. Connolly, Moraga, and Harold T. Ray, Walnut Creek, both of Calif., assignors to Grove Valve and Regulator Company, Oakland, Calif.

Filed May 5, 1980, Ser. No. 146,764
Int. Cl.³ F16K *27/00, 5/00*
U.S. Cl. 251—367 **3 Claims**



1. For a ball valve body having a generally cylindrical tubular main body band with an annular end surface and a valve ball journalled therein, the width of said body band being less that the diameter of said ball;

means forming a generally circular, end closure for said body band from a single thick flat steel plate;

said means further forming an integral tubular hub on said end closure;

a circular flow passageway through said integral end closure and hub;

the steel of said end closure being swaged axially outward around said flow passageway to form said hub with an inner surface of pipeline diameter at the axially outer end thereof flaring radially outward to extend closely adjacent the surface of said valve ball to merge with generally radially portions of said end closure extending in the outer diameter thereof;

an annular recess for a seal ring assembly out in said outwardly flaring portion axially outward of said radial portions; and

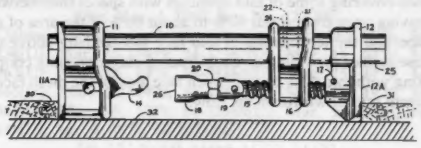
means attaching said end closure to said annular end surface of the body band.

4,339,113

SCREW OPERATED JACK

George W. Vosper, 149 Earl St., Kingston, Ontario, Canada (K7L 2H3)

Continuation-in-part of Ser. No. 60,487, Jul. 25, 1979, abandoned. This application Jun. 16, 1980, Ser. No. 159,646
Int. Cl.³ B25B *1/02*
U.S. Cl. 254—13 **7 Claims**



1. A jack comprising:

(a) a first pipe threaded at one end thereof;

(b) a first jaw member slidable longitudinally along said first pipe for quick positioning and having means to lock the same at any position therealong;

(c) a mounting bracket having first and second threaded bores extending therethrough parallel to and spaced apart from one another;

(d) a second pipe threaded at one end thereof, said first and second pipes being threaded into said first threaded bore respectively from opposite ends thereof;

(e) a second jaw member slidable along said second pipe;

(f) a threaded rod extending through said second threaded bore in the bracket and rotatably connected to said second jaw member to move the same during rotation of the threaded rod, said threaded rod being axially parallel with said pipes; and

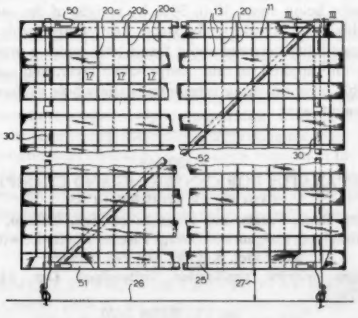
(g) handle means swingingly connected at one end thereof to one end of said threaded rod for rotating the same, said first and second jaw member each having an article engaging face and wherein said faces are directed away from one another.

4,339,114

FENCING SYSTEM

Robert F. Deike, Cheyenne, Wyo., assignor to Foresight Industries, Inc., Cheyenne, Wyo.

Filed Mar. 17, 1980, Ser. No. 131,034
Int. Cl.³ E01F *7/02;* F16B *7/00*
U.S. Cl. 256—12.5 **29 Claims**



1. An open bottom fence providing a barrier of only about 40 to 60% of its total area above the bottom and effective to create downstream air flow from an upstream particulate material laden wind that will deposit particulate material in a downstream drift initially spaced behind the fence at a distance about equal to the fence height and building up to a height greater

than the fence height which comprises a frame having longitudinally spaced supports, means holding said supports upright at a rearwardly inclined angle of from about 10° to about 20° to a line normal to a base surface on which the fence is installed, an open mesh face secured to said uprights spanning the space therebetween and terminating substantially above said base surface, said face composed of intersecting rows of rods defining openings therebetween, spaced parallel slats secured to said rods covering some of said openings with spaces therebetween leaving open from about 40% to about 60% of the area of said face, and the termination of said face substantially above said base surface providing an unobstructed choke opening cooperating with said 40% to 60% open face area of the mesh face to create said downstream air flow.

4,339,115

HEAT INSULATING LINING FOR METALLURGICAL VESSELS

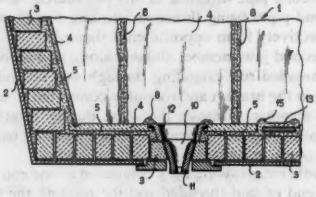
Jean-Charles Daussan; Gerard Daussan, both of Metz, and Andre Daussan, Longeville les Metz, all of France, assignors to Daussan et Compagnie, Woippy, France

Filed Mar. 11, 1980, Ser. No. 130,175

Claims priority, application France, Mar. 22, 1979, 79 07287

Int. Cl.³ C21B *7/04*

U.S. Cl. 266—280 **9 Claims**



1. In a heat insulating lining for metallurgical vessels intended to contain liquid metal, comprising a permanent layer in a refractory material and a consumable layer to be fitted to the interior of the vessel and intended to be in direct contact with the liquid metal, said consumable layer comprising a plurality of plates made of a mixture of inorganic particles and of fibers, said particles and fibers being embedded in a binder; the improvement comprising, between the above-mentioned permanent and consumable layers, a compressible layer of fibers resistant to the temperature obtaining at the interface between said compressible layer and said consumable layer, the last-named fibers being partially embedded in a binder, the amount of binder being about 10 to 30% by weight of the said compressible layer in order to impart to said compressible layer a compressibility between about 5 and 10% under a pressure of 10 kg/cm² applied on said compressible layer, and said compressible layer covering substantially the whole surface of the permanent layer.

4,339,116

APPARATUS FOR CENTERING AND CLAMPING CIRCULAR WORKPIECES

Gottlieb Benz, Flums, and Hans-Jakob Egg, Ellikon, both of Switzerland, assignors to George Fischer Limited, Switzerland

Filed Oct. 8, 1980, Ser. No. 195,053

Claims priority, application Switzerland, Oct. 11, 1979, 9163/79

Int. Cl.³ B25B *1/20*

U.S. Cl. 269—132 **15 Claims**

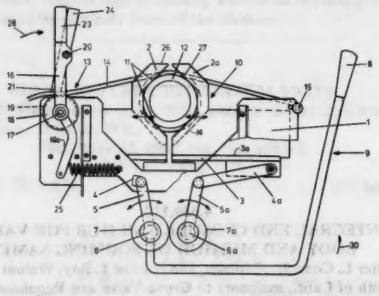
1. A clamping apparatus for centering and clamping workpieces having circular cross sections and diameters within a predetermined range of diameters along a predetermined axis, comprising

a support frame;

first and second jaws shaped to center and partially engage a workpiece;

means for mounting said jaws on said frame for sliding movement toward and away from each other to permit said jaws to at least partially surround the workpiece;

means, coupled to and interconnecting said jaws, for moving said jaws simultaneously and uniformly toward each other into engagement with the workpiece to locate the workpiece at a centered position coaxially along the predetermined axis; and



clamping means, attached to said frame, for firmly clamping the workpiece in said centered position, said clamping means including

an elongated pliable clamping means, fixedly attached at one end to said frame, for extending in a loop of at least 360°, crossing itself and circumscribing the workpiece, and

means for gripping said clamping means at a point spaced from said one end.

4,339,117

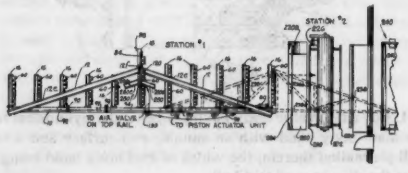
WOOD TRUSS FORMING APPARATUS

Harley R. Tison, 409 Orchard St., Oswego, Ill. 60543

Division of Ser. No. 21,576, Mar. 19, 1979, Pat. No. 4,252,058. This application Nov. 6, 1980, Ser. No. 204,499

Int. Cl.³ B30B *3/00*

U.S. Cl. 269—289 MR **16 Claims**



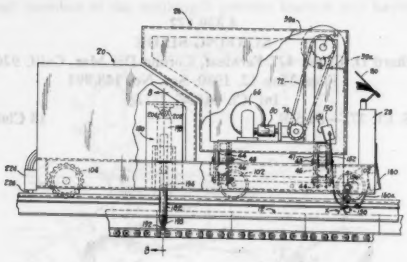
1. Apparatus for making a wood roof truss, or the like, comprising: wood member positioning means for substantially horizontally arranging wood members in positions corresponding to the ultimate positions of the wood members in a completed wood roof truss, or the like, and for enabling the wood members to be at least loosely fixed in position with relation to one another to form a unitary structure having a configuration corresponding to that of a completed wood roof truss, or the like, said positioning means including adjustable wood member support means for receiving the wood members forming the upper chords of a wood truss, or the like, and wood member engaging and elevating means for raising as a unit the wood members as arranged and loosely fixed in their ultimate positions in a completed wood roof truss, or the like, to a level above the horizontal plane of the wood member positioning means whereby the wood members in their loosely fixed condition can be moved in any desired direction as a unit while still in a substantially horizontal position without inter-

ference from the wood member positioning means, said wood member engaging and elevating means including roller means selectively movable from a normally inoperable position to an operable position to enable the roller means to engage only those wood members desired.

4,339,118
CLOTH SPREADING METHOD AND APPARATUS

James O. Burton, Brunswick; Christopher J. Dannels, Lakewood, and Frank J. Ahlin, Willoughby Hills, all of Ohio, assignors to The Richman Brothers Company, Cleveland, Ohio

Filed Jan. 2, 1980, Ser. No. 109,099
Int. Cl.[3] B65H *29/46*
U.S. Cl. 270—31 10 Claims



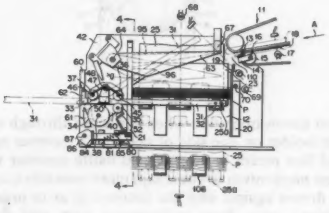
1. A cloth spreading apparatus, comprising:
(a) a spreader frame;
(b) a longitudinally moveable cloth laying surface;
(c) spreader drive means for moving said spreader frame longitudinally relative to the laying surface;
(d) a transversely moveable cloth freed carriage mounted to said frame and operative to maintain lateral alignment between the cloth to be laid and said laying surface;
(e) cloth feed drive means for dispensing cloth from said carriage onto said cloth laying surface, said cloth defining an angle of incidence with respect to said laying surface;
(f) feedback means for controlling the speed of the spreader drive means and the cloth feed drive means;
(g) cloth angle detecting means for sensing said angle of incidence of the cloth being laid and operative to control said cloth feed drive means to maintain a predetermined cloth incidence angle when said spreader is laying cloth; and,
(h) spreader advancing means including engaging means mounted to said spreader frame, operable to engage said cloth laying surface for advancing said spreader to a predetermined position upon movement in said cloth laying surface.

2. A cloth spreading apparatus, comprising:
(a) a spreader frame;
(b) a cloth laying surface;
(c) spreader drive means for moving said spreader frame relative to the laying surface;
(d) cloth feed carriage mounted to said frame including a cloth feed roll and a drive means for said roll;
(e) a feedback means for controlling the speed of the spreader drive means and the cloth feed drive means;
(f) said cloth feed carriage operative to dispense cloth along a feed path extending between said cloth feed roll and said cloth laying surface, the cloth dispensed by said carriage defining an angle of incidence with respect to said laying surface;
(g) cloth angle sensing means positioned along said cloth feed path and operative to sense the angle of incidence over a continuous range of angles to generate a varying electrical control signal which varies as a function of said cloth incidence angle to indicate a number of different angles of incidence of said cloth; and,
(h) angularity control means cooperating with said cloth angle sensing means for maintaining a desired cloth incidence angle.

4,339,119
PAPER SHEETS SEPARATING APPARATUS

Hiroshi Sasaki, and Yoshio Ariga, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 4, 1980, Ser. No. 127,985
Claims priority, application Japan, Mar. 13, 1979, 54-31236[U]; Mar. 15, 1979, 54-32362[U]; Mar. 15, 1979, 54-32363[U]; Mar. 15, 1979, 54-32364[U]; Mar. 15, 1979, 54-32365[U]; Mar. 15, 1979, 54-32366[U]; Mar. 15, 1979, 54-32367[U]; Mar. 15, 1979, 54-32368[U]; Mar. 26, 1979, 54-37859[U]; Apr. 4, 1979, 54-39755[U]
Int. Cl.[3] B65H *29/44, 31/32, 31/20*
U.S. Cl. 271—180 7 Claims



3. A paper sheets processing apparatus for separating continuously fed paper sheets every predetermined number comprising:
a chamber adapted to receive sheets stacked therein;
means for introducing paper sheets into the stacking chamber, said means having an opening facing the stacking chamber and through which paper sheets can be introduced;
elongated separating means including plurality of rod-like members spaced parallel from one another;
means for driving the separating means in the longitudinal direction to thereby cause the separating means to be completely drawn out of the stacking chamber;
rocking means for rocking the separating means from their normal horizontal position to a position slanted upward by a predetermined angle;
said driving means including
a driving roller capable of rotating selectively in both directions around an axis and having an outer friction circumference, the driving roller contacting the rod-like separating members on the outer circumference thereof;
a guide roll assembly contacting the rod-like separating members, respectively in cooperation with the driving roller and sliding the rod-like separating members in the longitudinal direction thereof upon rotation of the driving roller; and
a frame assembly rockable around said axis of the driving roller for mounting the guide roller assembly thereon.

4,339,120
AMUSEMENT DEVICE FOR CREATING AN ILLUSION

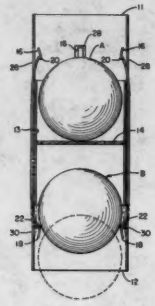
Alex G. Czarny, 1055 W. Stanford Ave., Englewood, Colo. 80110

Filed Sep. 12, 1980, Ser. No. 186,575
Int. Cl.[3] A63J *5/00, 21/00*
U.S. Cl. 272—8 R 13 Claims

1. An illusionary device comprising in combination:
an open-ended, generally cylindrical holder having radially inwardly projecting, axially spaced yieldable retainers on the inner wall of said holder;

an inner concentric cylinder slidably disposed within said holder and constrained for axial movement between said axially spaced yieldable retainers, said inner concentric cylinder having a baffle member projecting radially inwardly therefrom;

first means releasably retained between one of said retainers and said baffle member; and



second means operative when advanced through one end of said holder on one side of said baffle member opposite to said first means to engage said baffle member with sufficient momentum to cause said inner concentric cylinder to be driven against said one retainer so as to urge said one retainer away from engagement with said first means whereby to permit release of said first means from said holder.

4,339,121

ORBITAL AMUSEMENT-PARK RIDE

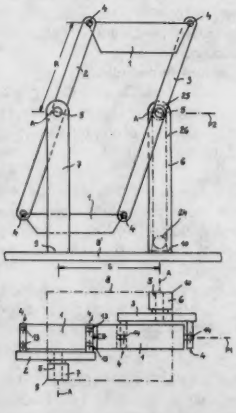
Anton Schwarzkopf, Münsterhausen, Fed. Rep. of Germany, assignor to Firma Anton Schwarzkopf Fahrzeug- und Stahlbau, Münsterhausen, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,218

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1980, 3042872

Int. Cl.³ A63G *1/08*

U.S. Cl. 272—38 **11 Claims**



1. An orbital amusement ride adapted to stand on the ground and comprising:

a pair of diagonally spaced-apart posts standing on the ground and having respective upper ends defining respective pivot axes, said axes being generally parallel and defining a generally horizontal plane with said posts being generally perpendicular to said plane and spaced apart thereon parallel to said axes;

respective generally parallel arms pivotal on said posts about the respective axes and having respective diametrically opposite first and second arm ends;

drive means for rotating said arms jointly and synchronously about the respective axes with said first ends spaced horizontally from each other and said second ends spaced horizontally from each other; and

a first passenger-receiving car pivoted on and bridging said first arm ends and a second passenger-receiving car pivoted on and bridging said second arm ends, whereby on joint synchronous rotation of said arms each of said cars describes a generally elliptical orbit lying in a vertical plane and generally bisected by said horizontal plane.

4,339,122

SURFING SLIDE

Richard D. Croul, 427 Fernleaf, Corona Del Mar, Calif. 92625

Filed May 12, 1980, Ser. No. 148,991

Int. Cl.³ A63G *21/18*

U.S. Cl. 272—56.5 R **18 Claims**

1. An amusement apparatus for simulating riding motion over an ocean wave as encountered in ocean surfing, comprising:

a shaped slope having a generally downward inclination to provide a desired rate of descent;

a plurality of prefabricated panel sections positioned on said slope forming a relatively seamless covering with a smooth surface finish on which a user may slidably travel, said panel sections adapted to deform to direct a user's path in response to forces exerted against them by said user in sliding travel, each of said sections comprising:

an upper and a lower thin surface sheet, said upper sheet having a smooth surface finish to provide a slippery surface when wet;

a resilient core disposed between said surface sheets;

means for interconnecting said panel sections to provide a relatively seamless upper smooth surface including means for anchoring said panel sections to said slope; and means for applying a thin film of water upward through openings distributed throughout the upper surface to the smooth surface of said upper sheet in continuum.

4,339,123

T-JOINT STRUCTURE FOR TRAMPOLINES AND THE LIKE

Rolland W. Rich, P.O. Box 3828, Albany, Ga. 31706

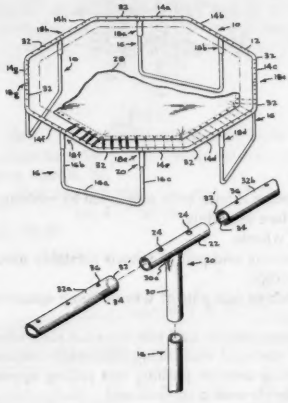
Filed Jun. 10, 1981, Ser. No. 272,111

Int. Cl.³ A63B *5/08*

U.S. Cl. 272—65 **7 Claims**

1. A demountable trampoline capable of being separated into components suitable for compact packaging for shipment, comprising a segmented tubular top rail frame forming a closed loop frame to be supported in elevated horizontal position by vertical ground-engaging leg members and support a trampoline sheet in encircled relation within the top rail frame sus-

pended by plural suspension springs interconnecting margins of the trampoline sheet to the frame, the top rail frame being formed of elongated top rail tube member sections of predetermined length having a uniform inner diameter bore opening through the opposite ends of each section and having a transversely narrow elongated interlocking end slot opening through each respective end of each section and extending inwardly along the lowermost wall portion thereof a predetermined short distance longitudinally parallel to the center axis of its adjacent tube member end portion, a T-joint connector for interconnecting adjacent ends of each top rail section and supporting the same from one of the leg members comprising a horizontal top cross-head member of circular cross-section having an outer diameter corresponding to said uniform inner diameter bores of the top rail tube members and a vertical tubular socket leg member to form the leg of the T-joint joined at its uppermost end to the lowermost portion of the cross-head member at the midlength portion thereof and having a



downwardly opening cylindrical bore in the lower portion thereof sized to telescopically receive the upper end portion of one of said leg members therein, the uppermost portion of said vertical socket leg member being flattened immediately adjoining the top cross-head member to a transversely narrow elongated tongue-like cross-section sized to interfit in and closely conform to said interlocking end slots in the adjacent confronting ends of a pair of said top rail tube member sections, whereby said tongue-shaped uppermost end portion interfits into said slots when the end portions of the adjacent pair of tube member sections are telescopically assembled onto the top cross-head member to positions disposing their confronting ends in abutment aligned with the center axis of the vertical socket leg member serving to restrain the top rail tube member sections against rotation about their axes, and connector means for restraining the top rail tube sections against axial displacement relative to the T-joint top cross-head member on which they are assembled.

4,339,124

NECK EXERCISING DEVICE

Daniel Vogler, 505 W. Gear St., Raymondville, Tex. 78580

Filed Oct. 3, 1980, Ser. No. 193,589
Int. Cl.³ A63B *23/00*
U.S. Cl. 272—94 **1 Claim**

1. A neck exercising device comprising in combination

(a) a football helmet that is adapted to be strapped securely on the head;

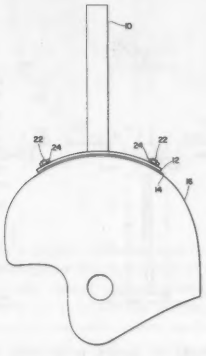
(b) an elongated steel bar located immediately above the central top portion of said football helmet with the longitudinal axis of said steel bar extending in an essentially vertical direction,

(c) a curved steel plate which is about ¼ inch thick, 2.5 inches in width and 6–7 inches in length, the curvature of said plate corresponding to the curvature of the top portion of said football helmet,

the bottom end of said elongated steel bar being welded to the convex surface of said curved steel plate,

(d) a rubber bushing having approximately the same size and shape as said curved steel plate,

the entire undersurface of said rubber bushing being secured flush against the upper central surface of said football helmet and the entire undersurface of said curved steel plate being secured flush against the upper surface of said rubber bushing, said securement being



effected by a plurality of fastening means that are located at spaced apart portions of said curved steel plate and which fastening means extend through both said curved steel plate, said rubber bushing and the upper central portion of said football helmet,

(e) at least one bar bell disc with a central bore mounted on said vertically disposed steel bar, each said bar bell disc being disposed in a generally horizontal plane and bearing its weight downwardly on the top of said curved steel plate, and

(f) a locking collar mounted on said steel bar at a point immediately above the upper most bar bell disc so as to secure said bar bell disc against upwardly movement.

4,339,125

SINGLE COLUMN EXERCISING APPARATUS

Tim M. Uyeda, South San Gabriel, and Parker E. Mahnke, Glendale, both of Calif., assignors to Marcy Gymnasium Equipment Co., Alhambra, Calif.

Filed Dec. 18, 1979, Ser. No. 104,885
Int. Cl.³ A63B *23/02*
U.S. Cl. 272—118 **10 Claims**

1. An exercising apparatus, comprising:

(a) a substantially vertically disposed selector bar;

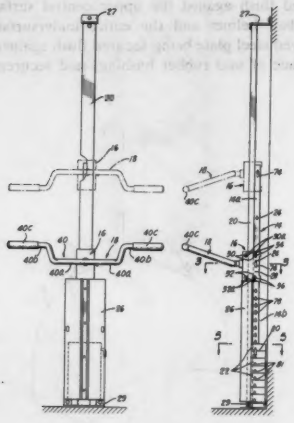
(b) a reciprocating means connected to said selector bar for mutual reciprocal movement therewith;

(c) a plurality of weights, each of said weights having a centrally located aperture adapted to receive said selector bar;

(d) means for selectively interconnecting said selector bar with each of said weights;

(e) a substantially vertically disposed single central guide element having substantially vertically extending external surfaces closely receivable in said apertures formed in said weights, said central guide element being located adjacent to and externally from both said selector bar and said reciprocating means, said central guide element having means adapted for operable association with said selector bar to permit said selector bar to be guided along the outer

surfaces of said central guide element, said central guide element being further adapted for operable association with said reciprocating means and including guide means for guiding reciprocal movement of said reciprocating means along a substantially vertical path said guide means comprising at least one of said external vertically extending external surfaces of said single central guide element; and



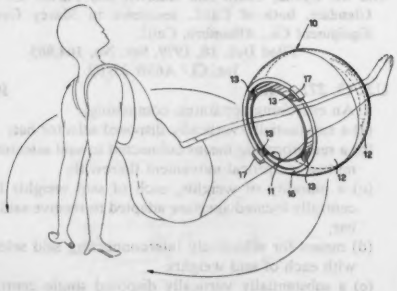
(f) body engaging means projecting laterally outwardly from said reciprocating means for engagement by a trainee to impart vertically reciprocating movement thereto, whereby a lifting force exerted on said body engaging element tends to apply an eccentric force to said reciprocating means, said guide column being adapted to counteract the tendency to apply said eccentric force.

4,339,126

ROLLABLE DEVICE FOR RECEIVING A USER'S LIMBS DURING EXERCISE

Gianfranco Marletta, Via Calamandrei 1, Cinisello Balsamo (Milan), Italy

Filed Sep. 10, 1980, Ser. No. 186,020
Claims priority, application Italy, Oct. 4, 1979, 26265 A/79
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—127 **11 Claims**



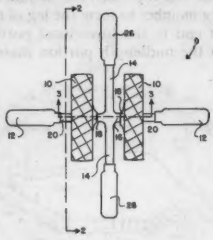
1. An apparatus for use in the performance of gymnastic movements comprising an elongated tubular support means for receiving and supporting the lower limbs of a gymnast, an outer generally barrel shaped casing housing said supporting means, means for rotatably journalling said generally casing relative to said support means, said support means further comprising substantially spaced apart rotatable journaling means positioned substantially at the ends of the tubular support means, and said generally casing including peripheral exterior surface means for continuously and uninterruptedly contacting the ground upon motion being imparted to said apparatus by the lower limbs of a gymnast.

4,339,127

AXLE-MOUNTED WHEEL EXERCISING DEVICE

Elston Mitchell, 164 N. Summit, Decatur, Ill. 62522

Filed Oct. 20, 1980, Ser. No. 198,390
Int. Cl.³ A63B *21/00*
U.S. Cl. 272—127 **4 Claims**



1. An exercise device to be employed by pushing and pulling along a surface including:

a pair of wheels,

an axle having said pair of wheels rotatably mounted coaxially thereon,

said wheels of said pair of wheels being spaced apart along said axle,

a shaft connected to said axle between said wheels,

said axle and said shaft being alternately engaeable by the limbs of a user for pushing and pulling operation to roll said wheels over a surface, and

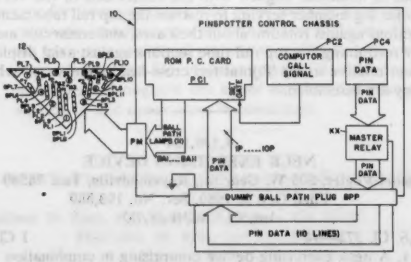
said shaft being perpendicular to said axle and extending in two directions from said axle.

4,339,128

BOWLING BALL PATH INDICATOR WITH ROM BALL PATH SELECTOR

James H. Multner, Los Angeles, Calif., assignor to AMF Incorporated, White Plains, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,429
Int. Cl.³ A63D *5/04*
U.S. Cl. 273—54 D **16 Claims**



1. In an optimum ball path indicator means for a bowling alley including a pin spotter, a pin spotter mask having selectively illuminated ball path arrows thereon and pin sensing means responsive to pins left standing after the bowling of a first ball in a bowling frame, the invention comprising:

means for selecting and illuminating an optimum ball path

and a ball path arrow corresponding thereto for the bowling of a second ball in said bowling frame comprising:

a plurality of standing pin data input means corresponding one to each standing position on a bowling alley and responsive to the presence and absence of standing pins at said standing pin positions to generate representative first and second logic state signals, respectively;

read only memory means having a plurality of address input means correlated, respectively, with said standing pin data input means and connected therewith to receive standing pin information represented by a combination of said first and second logic state signals with said combination of first and second logic state signals corresponding to a discrete address in said read only memory means;

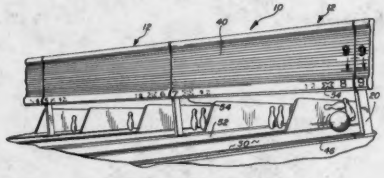
said read only memory means converting combinations of said first and second logic state signals at said address input means to a coded output peculiar to an optimum ball path for each said combination; and outputs for converting a known group of said coded outputs to a predetermined enabling output for selectively enabling a ball path arrow on said pin spotter mask representing the optimum ball path.

4,339,129

MULTI-GRAPHIC MASKING UNIT

Michael G. Gautraud, Muskegon, Mich., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jan. 23, 1981, Ser. No. 227,788
Int. Cl.³ A63D *5/04*
U.S. Cl. 273—54 R **16 Claims**



1. A display device for displaying at least one display panel comprising a support straddling at least one bowling lane forward of a kickback nose block on the lane, a panel masking unit having a frame pivotally mounted on said support, said frame having a center of gravity above and forward of the pivotal mounting so as to maintain said masking unit in an upright position, an elongate masking member projecting rearwardly and angularly from a forward edge of a top wall of said frame, a second elongate masking member projecting upwardly and angularly from a forward edge of a bottom wall of said frame, said masking member being co-terminous with the extremities of the top wall and bottom wall, said frame having a portion in spaced relation from said two masking members to form a pocket therebetween, and at least one display panel seated in said pocket with the masking members overlapping the upper and lower edge portions of said panel and with the side edges of the panel being substantially co-terminous with the extremities of the top wall and bottom wall of the frame.

4,339,130

GAME RACKET

Royce H. Husted, 711 Lakeside Dr., Wheaton, Ill. 60187

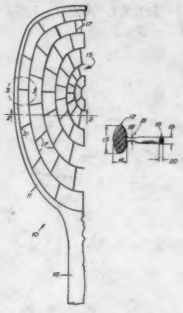
Continuation-in-part of Ser. No. 16,522, Mar. 1, 1979, abandoned. This application Feb. 25, 1980, Ser. No. 124,571
Int. Cl.³ A63B *49/02, 51/02*
U.S. Cl. 273—73 R **3 Claims**

1. In a molded game racket comprising, in combination,

(a) a handle,

(b) a frame, having a frame cross-section with a frame thickness and a frame width, and

(c) an elastic net molded in unison with at least said frame, said net comprising a plurality of elastic elements integrally connected to said frame, each such element having an element cross-section with an element thickness and an element width, said element width being substantially smaller than said frame width, wherein the improvement comprises: said elements having a progressively increasing thickness from the frame towards the center of said net



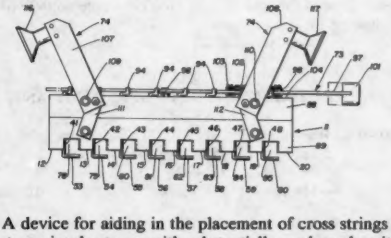
so as to provide a higher stiffness or spring rate thereat when said net is considered independent of said frame, the end portions of said elastic elements being cantilevered from said frame so as to stiffen the periphery of said net thereby resulting in a net with a more uniform stiffness so that the recoil effect of a ball bouncing off the various parts of said net is evened.

4,339,131

RACKET STRINGING DEVICE

John A. Balaban, 4142 Graham St., Pleasanton, Calif. 94566

Filed Dec. 8, 1980, Ser. No. 214,578
Int. Cl.³ A63B *51/14*
U.S. Cl. 273—73 A **8 Claims**



1. A device for aiding in the placement of cross strings in a racket previously strung with substantially coplanar longitudinal strings comprising:

a support having a plurality of substantially coplanar string bearing surfaces transversely spaced for placement on a first set of alternate longitudinal strings in said racket;

a plurality of members mounted for rotation on said support about parallel spaced axes substantially perpendicular to said bearing surfaces and also being mounted for axial displacement relative to said bearing surfaces, each of said members having an offset end rotatable with said members to first and second positions parallel and perpendicular to said longitudinal strings respectively;

said ends in second position being juxtaposed to a second set of longitudinal strings intermediate said bearing surfaces and said first set of alternate longitudinal strings;

means for jointly rotating said members to said first and second positions; and

means for jointly axially displacing said members while in said second position to effect relative displacement of said first and second sets of longitudinal strings to provide a

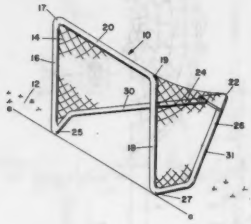
clear lateral path therebetween for receipt and tensioning of a cross string.

4,339,132

LACROSSE GOAL

Lee D. Stevens, 65 Bishop Dr., Aston, Pa. 19014, and Harry C. Grau, 1329 Colton Rd., Gladwyne, Pa. 19035

Filed Mar. 19, 1981, Ser. No. 245,384
Int. Cl.³ A63B *63/02*
U.S. Cl. 273—400 **4 Claims**



1. A frame for a lacrosse goal comprising:

two upright frame members;

a crossbar frame member joining the upper ends of the upright members, said crossbar together with the upright members defining a vertical plane and enclosing that portion thereof which constitutes a goal mouth;

a base having two leg members, each leg member having a first end interconnecting with the other leg at the rear periphery of the frame and a second end which connects to the lower end of one of the upright members, said base extending rearward in the plane perpendicular to the plane of the goal mouth, thereby defining a goal enclosure;

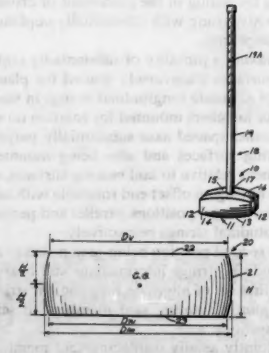
in which a first portion of each said leg immediately rearward of the goal mouth forms an obtuse angle with the plane of the goal mouth, and a second portion of each said leg, beginning at a point disposed at a slight distance from the plane of the goal mouth forms an acute angle with the plane of the goal mouth.

4,339,133

MALLET DRIVEN SLIDING DISC GAME AND APPARATUS

Norwood R. Warehime, 704 W. 34th St., Baltimore, Md. 21211

Filed Sep. 15, 1980, Ser. No. 187,536
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—126 R **10 Claims**



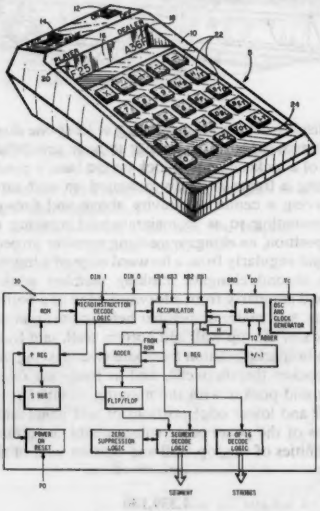
1. Mallet driven sliding disc game and apparatus therefor, wherein the apparatus comprises a smooth and horizontal playing surface means, said playing surface means including a game area means, at least one striking mallet, and a set of five sliding game pieces of resilient material being circular discs with maximum diameter of about 4 inches (10.2 cms) to about 7 inches (17.7 cms), with two of said five pieces having first type distinguishing markings, two others of five said pieces having second type distinguishing markings, and remaining one of five said pieces having a third type distinguishing marking, said mallet comprises a handle member having a gripping surface means at one end and is secured perpendicularly to the top central portion of an elongated head member at its other end, said head member being essentially rectangular in cross section normal to the nominal longitudinal axis at the central portion of said head member, with top and side surfaces of said head member tapering gradually downwardly and inwardly respectively while moving toward the faces at each end of said head member, said faces being essentially rectangular in shape and positioned normal to the nominal longitudinal axis of said head member, bottom surface of said head member being flat, whereby players competing in a prescribed manner, on said playing surface means, drive said game pieces with said mallet to position said game pieces for game advantage and to make maximum contact and proximity point scores in attempt to win game.

4,339,134

ELECTRONIC CARD GAME

Gary W. Macheel, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 5, 1977, Ser. No. 813,199
Int. Cl.³ A63F *1/00*
U.S. Cl. 273—138 A **9 Claims**



6. An electronic true blackjack card game for hand-held operation by a player comprising:

a hand-held housing constructed and arranged to include;

keyboard means having keys for selection of player decision operations including the play of the game and the placement of bets in accordance with the complete rules of blackjack;

display means for simultaneous display of card hands held by a player and a dealer, display of player betting and the current stake; and

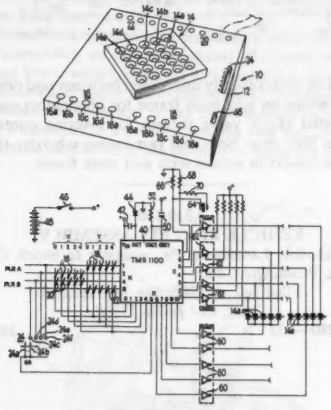
microprocessor means for controlling the game in accordance with the rules of blackjack and for calculating the betting status of the player in accordance with the outcome of the game and displaying player bet and current stake.

4,339,135

ELECTRONIC MATRIX BOARD GAME APPARATUS AND METHOD

Jeffrey D. Breslow, Highland Park; Alex Imatt, and Christian H. Oberth, both of Chicago, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Oct. 22, 1980, Ser. No. 199,468
Int. Cl.³ A63F 9/06
U.S. Cl. 273—237 **50 Claims**



46. A microprocessor controlled portable game comprising:

a generally rectangular, portable housing;

a microprocessor within said portable housing;

an array of light emitting devices arranged in rows and columns on said housing and visible from atop thereof;

first and second series of push buttons one for each of two players connected to said microprocessor and positioned on opposite sides of said array, each series including a push button for each of said rows and a push button for each of said columns;

means including said microprocessor and responsive to simultaneous actuation of a row push button and a column push button in one of said series for energizing the light emitting device in the row and column corresponding to said simultaneously actuated push buttons; and

means within said microprocessor for identifying a simultaneous actuation of a row and column push button in either of said series corresponding to a previously selected light emitting device by one player or a device adjacent to a device previously selected by the other player and in the same row or column as said device previously selected by said other player as an invalid move and means responsive to said identifying means for preventing the energization of said adjacent device.

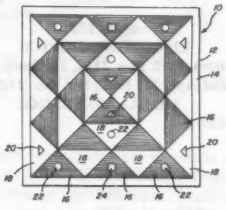
50. The method of playing a microprocessor controlled game of the type which includes an array of light emitting devices arranged in rows and columns and two sets of manually operable switches, one for each of two players, for identifying different ones of said devices, which comprises the steps of establishing a predetermined time period, sequentially energizing different ones of said devices in a predetermined one of said rows at random, then maintaining one of the devices in said predetermined row illuminated continuously for the predetermined time period, identifying said one device by one of the players, and responding to the identification of a device adjacent to said one device and in the same row or column as said one device by one of the players within said time period by sequentially energizing different ones of said devices at random in the row or column which contains said adjacent device and is perpendicular to a line connecting said one device and said adjacent device.

4,339,136

BOARD GAME HAVING TRIANGULAR PLAYING SPACES

Neil A. Gittings, 7320 Red Ledge Dr., Scottsdale, Ariz. 85253

Filed Jan. 8, 1981, Ser. No. 223,276
Int. Cl.³ A63F 3/00
U.S. Cl. 273—242 **2 Claims**



1. A board game comprising a game board with a playing field having a plurality of triangular spaces of two distinguishable colors delineated thereon and arranged in concentric rows, all adjacent triangular spaces being distinguishably colored, all of the spaces having the same shape and dimensional characteristics, the apices of the innermost row of triangular spaces being disposed inwardly and in contacting relation to form the center of the playing field with only two intersecting lines passing through the center of the playing field, the innermost row of spaces comprising only four triangular spaces, the outer rows of triangular spaces having adjacent spaces inverted in relation to each other, a plurality of game pieces positionable on and movable along the triangular spaces, said game pieces being divided into two sets which are distinguishably colored with each set including a game piece designated as a square, three game pieces designated as a triangle and three game pieces designated as a circle, the game pieces designated as a triangle capable of moving one space, the game pieces designated as a circle capable of moving two spaces and the game piece designated as a square capable of moving three spaces with the object of the game being to block movement of the opponent's game piece designated as a square in which none of the pieces can jump each other and the game pieces must move their full capability during each turn of movement.

4,339,137

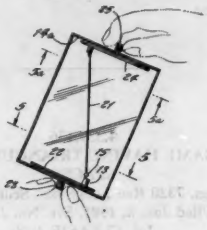
TETHERED BALL AND TUBE TARGET

Kenneth Kemp, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Mar. 16, 1979, Ser. No. 21,013
Int. Cl.³ A63B 65/00
U.S. Cl. 273—331 **3 Claims**

1. A puzzle, comprising in combination, a hollow transparent rectaugular box having a ceiling and a floor including a bead suspended from the ceiling and a tube mounted above

said floor, said tube being adapted to receive and retain therein said bead, including means for adjustably suspending the bead



in said box from said ceiling, whereby the point of suspension is movable.

4,339,138

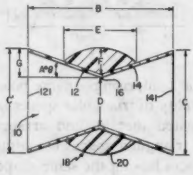
THROWING DEVICE

Carl M. Di Manno, P.O. Box 2111, Duxbury, Mass. 02332

Filed Apr. 21, 1980, Ser. No. 142,267

Int. Cl.³ A63B *65/00*

U.S. Cl. 273—428 **13 Claims**



1. A throwing device of hand-fitting external proportions comprising a tubular core comprising two hollow substantially frusto conical members placed small end to small end to define a common throat at the central portion of the device, said central portion being substantially surrounded by gripping means comprising a grip which covers part but not all of the exterior surface of the tubular core, leaving a portion of larger end of each member protruding exposed at each end of the device, said grip lying substantially within the imaginary surface contained by the larger ends of the two members and defining with the exposed protruding ends of the tubular core a trough or valley between each end and the central portion of the tubular member.

4,339,139

HYDRAULIC CIRCUIT FOR SYNCHRONOUS LIFT OF FLEXIBLE FRAME IMPLEMENTS

William C. Swanson, Clarendon Hills, Ill., assignor to International Harvester Co., Chicago, Ill.

Filed Jun. 5, 1980, Ser. No. 156,897

Int. Cl.³ A01B *63/22*

U.S. Cl. 280—43.23 **9 Claims**

1. In an implement having a main frame and at least one wing frame flexibly connected thereto, a wheel assembly on each frame for raising and lowering the associated frame, a hydraulic circuit for controlling said wheel assemblies comprising:

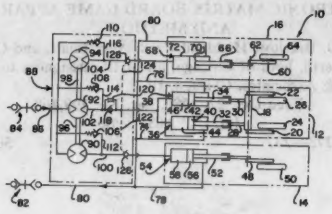
a hydraulic ram means connected to each wheel assembly, each wheel assembly ram means releasing a flow of hydraulic fluid to lower the associated frame;

a rotary flow divider having a rotor for metering flow to each hydraulic ram means;

a check valve between the ram means on said main frame and its associated rotor for permitting flow only toward said ram means;

an orifice in parallel with said check valve effective to generate a valve-piloting back pressure while affording only restricted flow from the ram means on said main frame for slowed lowering of the latter;

a pilot-operated check valve interposed between the ram means on said wing frame and its associated rotor; and



a pilot line hydraulically interposed between said orifice and ram means on said main frame for connecting said pilot-operated check valve thereto for insuring contemporaneous flow from both said ram means whereby the wing frame lowers in unison with said main frame.

4,339,140

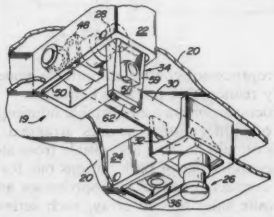
VEHICLE KING PIN ASSEMBLY

Andrew Abolins, Langhorne, Pa., assignor to Strick Corporation, Ft. Washington, Pa.

Filed Jun. 4, 1980, Ser. No. 156,310

Int. Cl.³ B62D *53/08*

U.S. Cl. 280—433 **10 Claims**



1. A king pin assembly adapted to be mounted on a first vehicle for coupling said vehicle to a second vehicle comprising first and second king pins integral in one piece with a common shaft, said king pins being 90° out of phase with each other so that pivoting of said shaft about its longitudinal axis alternately moves the king pins between operative and inoperative positions, a discrete first cam means for adjustably and alternately preloading each king pin in a direction parallel to said axis when each king pin is in its operative position, a discrete second cam means for adjustably preloading each king pin in a direction perpendicular to said axis when each king pin is in its operative position whereby the king pins in an operative position are preloaded in mutually perpendicular planes.

4,339,141

COLLAPSIBLE FOLDING CART

Robert Thiboutot, Lac St. Charles, Canada, assignor to Les Entreprises Rotot Ltee, St-Etienne de Beaumont, Canada

Filed Sep. 17, 1980, Ser. No. 187,988

Int. Cl.³ B62B *3/02*

U.S. Cl. 280—652 **5 Claims**

1. A collapsible folding cart movable between a first, erected condition and a second, collapsed condition, said cart comprising:

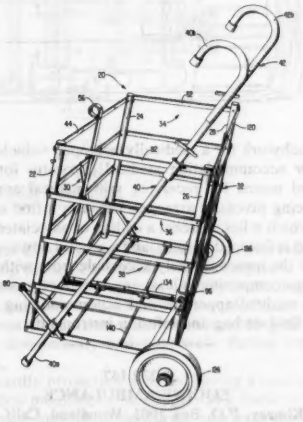
a pair of front corner posts;

a pair of rear corner posts;

means carried by said rear corner posts for rotatably supporting wheels;

a front framework comprising a plurality of vertically spaced link assemblies, an X-frame formed of crossed members having lower ends connected to a lower one of said link assemblies and upper ends connected to an upper one of said link assemblies, and means for releasably locking said front framework in a position holding said link assemblies horizontal each of said link assemblies being comprised of a pair of link members having distal ends pivotally connected to said front corner posts and proximal ends pivotally connected to each other in a central region of the link assembly so that the central region of the link assembly is movable vertically upwards to move the front corner posts towards each other to reduce the width of the front framework;

a rear framework comprising a plurality of vertically spaced link assemblies, an X-frame formed of crossed members having lower ends connected to a lower one of said link assemblies and upper ends connected to an upper one of said link assemblies, and means for releasably locking said front framework in a position holding said link assemblies horizontal, each of said link assemblies being comprised of



a pair of link members having distal ends pivotally connected to said rear corner posts and proximal ends pivotally connected to each other in a central region of the link assembly so that the central region of the link assembly is movable vertically upwards to move the rear corner posts towards each other to reduce the width of the rear framework;

a pair of side frameworks comprising a plurality of link elements having end portions pivotally connected to vertically spaced regions on the corner posts on each side of the cart so that the depth of the cart is reduced by moving the front corner posts towards the rear corner posts;

a bottom framework hingedly and pivotally connected to lower portions of said side frameworks and hingedly connected to lower portions of said front and rear frameworks;

longitudinally-extending handles positioned on both sides of the cart and having lower portions extending downwardly from the front of the cart to form legs for supporting the cart and upper portions extending upwardly from the rear of the cart to form grips that are gripped to facilitate cart movement; and

means for pivotally connecting said handles to said cart so that said handles are positioned in the first condition of the cart with longitudinal axes thereof extending diagonally upwardly from the front to the rear of the cart, and are positioned in the second condition of the cart with their axes extending generally parallel to the corner posts.

4,339,142

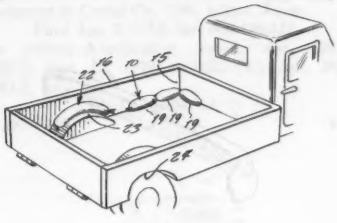
INNER TUBE TRACTION DEVICE

Douglas Tanner, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of, New York, N.Y. 10007

Filed Aug. 20, 1980, Ser. No. 179,677

Int. Cl.³ B60S 9/00

U.S. Cl. 280—759 **2 Claims**



1. A ballast weight for an automotive vehicle comprising in combination, a flexible tubing, a quantity of sand inside said tubing, means for closing opposite ends of said tubing, and a plurality of narrow constrictions longitudinally spaced along said tubing dividing the same into a plurality of longitudinal links of different weight values including indicia for indicating the total weight of the ballast, said constrictions being formed of tightening means mounted about the tubing periphery which are tightened adjustably to provide constrictions of desired diameters which permit selective flow of sand between adjacent links to selectively adjust the weight of any link in the ballast and allow folding of the ballast to accommodate the available space contour.

4,339,143

PRESSURE-SENSITIVE RECORDING MATERIAL

Isamu Yoshino, Kunitachi; Yasohachi Takahashi, Urawa, and Osamu Fujii, Osaka, all of Japan, assignors to Mishima Paper Co., Ltd., Tokyo and Naigai Ink. Mgf. Co., Ltd., Osaka, both of, Japan, part interest to each

PCT No. PCT/JP79/00318, § 371 Date Aug. 18, 1980, § 102(e) Date Jul. 18, 1980, PCT Pub. No. WO80/01263, PCT Pub. Date Jun. 26, 1980

PCT Filed Dec. 18, 1979, Ser. No. 205,962

Int. Cl.³ B41M 5/22

U.S. Cl. 282—27.5 **6 Claims**

1. A pressure-sensitive recording material in which two color-forming components capable of forming a colored substance upon reaction with each other are formed on the surfaces of separate supports as a completely transferable coated layer and a receptive coated layer respectively, said transferable coated layer being a layer of a hot-melt type coating containing one color-forming component, and said receptive coated layer being a layer having absorbent micropores and composed of 10 to 35% of microcapsules containing a liquid containing the other color-forming component, 70 to 50% of a fine powder which does not react with the color-forming

components to form a color, and 20 to 15% of a binder which does not react with the color-forming components to form a color, the diameter of said micropores being less than 10 microns, and the total volume of the micropores being greater than the total volume of the liquid within the microcapsules.

4,339,144

AUTO BUMPER AND ITS MANUFACTURING PROCESS

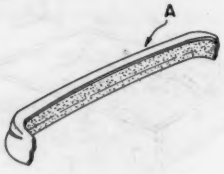
Yasumasa Nagasaka, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Nov. 14, 1979, Ser. No. 93,974

Claims priority, application Japan, Feb. 21, 1979, 54-19386

Int. Cl.³ B60R *19/04*

U.S. Cl. 293—120 **5 Claims**



1. An auto bumper comprising:
an outer visible part comprising a stainless steel plate having a first thickness;
a layer of one from the group consisting of aluminum and aluminum alloy bonded to one side surface of said plate, said layer being bonded to said plate by shot peening said metal surface and flame spraying said layer upon substantially said entire one side surface, said layer having a second thickness smaller than said first thickness; and
an inner part comprising a fiber reinforced plastic material bonded to said layer,
whereby said layer is sandwiched between and bonds said inner and outer parts to form a unitary bumper having low mass and high lustre.

4,339,145

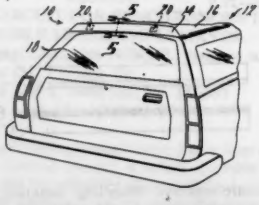
VEHICLE WIND DEFLECTOR

John A. Bott, 931 Lakeshore Dr., Grosse Pointe Shores, Mich. 48236, and John S. Cucheran, Lake Orion, Mich., assignors to John A. Bott, Grosse Pointe Shores, Mich.

Filed Nov. 12, 1980, Ser. No. 206,307

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **8 Claims**



1. An automobile wind deflector assembly for attachment to an automotive vehicle comprising
a wind deflector blade, having at least one pair of alignment flanges and a pair of attachment flanges;
a pair of mounting brackets operable to mount the blade on an automobile body, each having at least one flange cooperable with one of said alignment flanges of said blade and a mounting flange cooperable with one of said wind deflector mounting flanges;
means for fastening said mounting brackets to said automotive vehicle; and
means for securing said blade to said mounting brackets comprising means for fastening each of said blade mounting flanges to one of said bracket mounting flanges,
wherein said mounting flanges of said wind deflector blade includes means for obscuring both said means for securing said blade to each said mounting bracket and both of said mounting brackets from view when said wind deflector assembly is fully assembled on said vehicle.

4,339,146

COACHWORK FOR A MEDICALLY EQUIPPED VEHICLE

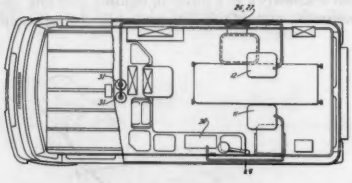
J. C. Ludwig Lehmann, Lorch, Fed. Rep. of Germany, assignor to Binz GmbH & Co., Lorch, Fed. Rep. of Germany

Filed Aug. 28, 1980, Ser. No. 182,323

Claims priority, application Fed. Rep. of Germany, Sep. 12, 1979, 2936858; Feb. 1, 1980, 3003687

Int. Cl.³ A61G *3/00*

U.S. Cl. 296—19 **25 Claims**



1. Coachwork for a medically equipped vehicle including a cabin for accommodating medical apparatus for emergency cases and means for receiving said medical apparatus, said means being pivotally arranged between a first upward position in which it lies adjacent a ceiling or associated part of said cabin and is fastened thereto, and a second downward position in which the means is freely accessible from within the cabin, said means comprising at least one container protectedly housing said medical apparatus and accommodating at least one infusion flask or bag and infusion instruments.

4,339,147

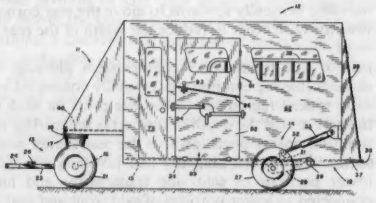
EQUINE AMBULANCE

John S. Kimzey, P.O. Box 1001, Woodland, Calif. 95695

Filed Nov. 3, 1980, Ser. No. 203,728

Int. Cl.³ B60P *3/32*

U.S. Cl. 296—24 C **10 Claims**



1. An equine ambulance comprising:
a. an elongated chassis extending from a forward end to an after end;
b. a housing carried on said chassis including a floor and lateral fore and aft side walls;
c. ground engaging wheel means for supporting said after end of said chassis;
d. a vertical fore and aft press wall located within said housing;

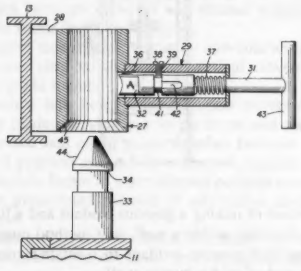
e. cable means for moving said press wall between a first position adjacent one of said side walls to a second position removed from either of said side walls;
f. door means on the perimeter of said housing for providing ingress and egress to an equine;
g. means for controlling the movement of said cable means so that said press wall can be urged gently but firmly against an equine in standing position between said press wall and the side wall adjacent the equine as said press wall is moved from said first position toward said second position; and,
h. means for coupling said forward end of said chassis to a tractor for transporting said ambulance.

4,339,148

APPARATUS FOR DETACHABLY CONNECTING A REMOVABLE FRAME TO A VEHICLE FRAME

Lloyd K. Smith, and James P. Ryan, both of Box 5624, Rome, Ga. 30161

Filed Jul. 7, 1980, Ser. No. 166,139
Int. Cl.³ B62D *23/00*
U.S. Cl. 296—35.3 **1 Claim**



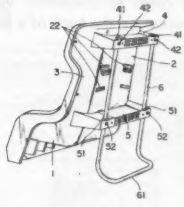
1. Apparatus for detachably connecting a removable frame to a supporting frame of a vehicle which comprises:
(a) a plurality of spaced apart, vertically extending sleeve-like members mounted on said removable frame with the lower ends of said sleeve-like members being beveled to provide downwardly and outwardly flaring lower end portions,
(b) an upwardly projecting member having a tapered upper end portion mounted on said supporting frame in position to telescope into the downwardly and outwardly flaring lower end portion of each of said sleeve-like members,
(c) a horizontal tubular housing mounted on one side of each said sleeve-like member and projecting outwardly thereof,
(d) a passageway through each said sleeve-like member in axial alignment with said tubular housing,
(e) a locking element having an annular recess therein mounted for axial movement in said tubular housing selectively from a first position outwardly of said sleeve-like member to a second position inwardly of said sleeve-like member;
(f) a recess in said upwardly projectng member in alignment with said passageway with the uppermost wall of said recess in position to receive a notch provided at the inner end of said locking element upon movement of said locking element to said second position,
(g) a compression spring urging said locking element toward said second position and into engagement with said recess in said upwardly projecting member,
(h) there being an opening through one side of said horizontal tubular housing in alignment with said annular recess in said locking element when said locking element is in said first position,
(i) a pin-like member extending through said opening in position to engage said annular recess and positively retain said locking element in said first position,
(j) an axially extending slot in said locking element having one end thereof communicating with said annular recess and receiving said pin-like member upon movement of said locking element to said second position, and
(k) a handle carried by the outer end of said locking element for selectively imparting axial and rotary motion thereto.

4,339,149

CHILD'S AUTOMOTIVE SAFETY SEAT

Shinroku Nakao, Yokohama; Yoshiyasu Ishii, Tokyo; Susumu Matsumoto, Tokyo, and Kiyoshi Hoshino, Tokyo, all of Japan, assignors to Combi Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1980, Ser. No. 136,639
Claims priority, application Japan, Apr. 10, 1979, 54/47056[U]; Apr. 13, 1979, 54/49222[U]; Apr. 24, 1979, 54/54802[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 297—250 **6 Claims**



1. A safety seat for children for use on an automotive seat having an automotive seat belt comprising: a seat body having through-holes formed therein including a bottom portion, a backrest portion and side walls, at least one upper arm means and at least one lower arm means, each arm means extending from a rear side of said backrest portion and having second through-holes formed therein, a hollow main support pipe having a substantially L-shape from a side view and a substantially U-shape from a front view being disposed in said second through-holes formed in said arm means, and adjusting and fastening means for determining a relative position between said main support pipe and said upper and lower arm means for adjusting the height and slant angle of said seat body in accordance with the shape of said automotive seat and size of a child, said adjusting and fastening means fastening said main support pipe to an end of said lower arm means so that said automotive seat belt can be fastened over said lower arm means so as to keep said safety seat from moving in a forward direction.

4,339,150

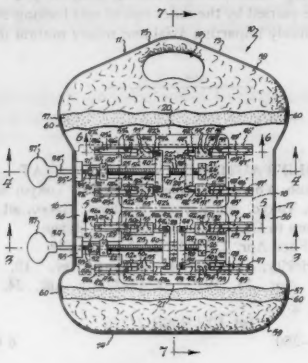
BACK SUPPORT CONSTRUCTION

Daniel E. McNamara, and Gerald Sinatra, both of Snyder, N.Y., assignors to GMSR Ortho Enterprises, Inc., Amherst, N.Y.

Filed May 5, 1980, Ser. No. 146,209
Int. Cl.³ A47C *3/00, 7/02*
U.S. Cl. 297—284 **12 Claims**

11. An adjustable back support comprising a substantially vertical base, first and second vertically spaced back support plates each defining a surface area for placement in contiguous relationship to a person's back, and mechanical linkage means for positively bodily moving said first and second back support plates in their entireties independently of each other in a sub-

stantially horizontal direction toward and away from said base to thereby provide two vertically spaced surface areas entirely



independent of each other at selectively variable distances from said base for supporting the back of a person.

4,339,151

HEAD RESTRAINT

Eric D. Riggs, 20010Ferguson St., Detroit, Mich. 48235

Filed Jan. 14, 1980, Ser. No. 111,955

Int. Cl.³ A47C *31/00*; A47D *15/00*

U.S. Cl. 297—464 **4 Claims**

1. A head restraint for supporting the user's head while seated in a chair comprising:

a strap having ends adapted to be secured in an encircling manner around a chair back; and

an adjustable headband secured to a central forward portion of the strap and adapted to encircle the user's head, the adjustable headband comprises a head strap secured to the central forward portion of the strap and having an adhesive patch with adhesive on opposed surfaces affixed to one end of the head strap with another end of the head strap being engageable with the adhesive patch to secure the head strap around the head of the wearer; and wherein the headband and strap encircling the chair back are made from paper strips.

4,339,152

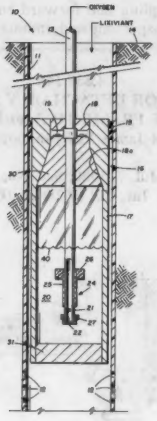
METHOD AND APPARATUS FOR MIXING GASEOUS OXIDANT AND LIXIVIANT IN AN IN SITU LEACH OPERATION

Bert J. Warner, Dallas; Melwyn L. Mathis, Arlington, and Warren F. Johnson, Dallas, all of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 31, 1977, Ser. No. 846,874

Int. Cl.³ E21B *43/28*

U.S. Cl. 299—5 **15 Claims**



1. A method of mixing a gaseous oxidant and a lixiviant at a downhole location within a well, said method comprising:

supplying said gaseous oxidant to a mixing zone near the lower end of said injection well;

trapping said gaseous oxidant within said mixing zone;

passing said lixiviant through said trapped gaseous oxidant within said mixing zone to mix and dissolve said gaseous oxidant into said lixiviant; and

removing undissolved gaseous oxidant from said lixiviant after said lixiviant has passed through said trapped gaseous oxidant.

4,339,153

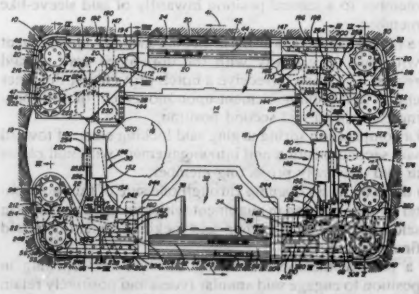
APPARATUS FOR EXTENDING AND RETRACTING THE CUTTER BARS OF A BORING TYPE MINING MACHINE

Maurice K. LeBegue, Argillite, Ky., and Earl C. Michael, Hoyleton, Ill., assignors to National Mine Service Company, Pittsburgh, Pa.

Filed Jun. 16, 1980, Ser. No. 159,581

Int. Cl.³ E21C *27/24*

U.S. Cl. 299—59 **8 Claims**



1. A mining machine comprising,

a mobile frame, said mobile frame having a front end portion adapted to advance to a position opposite a mine face,

a cutter chain carrying bar movably positioned on said mobile frame front end portion,

power means mounted on said mobile frame front end portion for moving said cutter chain carrying bar between a first position extended outwardly from said mobile frame and a second position retracted inwardly on said mobile frame,

a chain guide member carried by said cutter chain carrying bar, said chain guide member being positioned for lateral movement on said cutter chain carrying bar,

a control link pivotally connected to said mobile frame for moving said chain guide member laterally on said cutter chain carrying bar upon actuation of said power means,

said control link being pivotally connected at one end to said mobile frame and connected at the opposite end to said chain guide member,

said chain guide member having a horizontal slot,

retainer means connected to said cutter chain carrying bar and positioned in said horizontal slot to permit said chain guide member to move horizontally relative to said retainer means and said cutter chain carrying bar,

said power means being operable upon actuation to vertically move said cutter chain carrying bar to a preselected position between said first and second positions on said mobile frame front end portion,

said retainer means being vertically movable with said cutter chain carrying bar to transmit vertical movement to said chain guide member,

said control link being adapted upon movement of said cutter chain carrying bar to pivot on said mobile frame and move said chain guide member between a fully extended position and a fully retracted position relative to said mobile frame to a preselected position corresponding to the preselected position of said cutter chain carrying bar, and

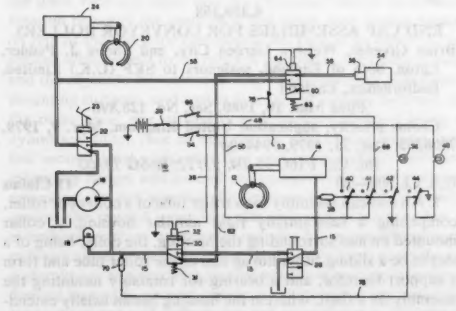
said chain guide member being restrained to vertical and horizontal movement upon pivoting of said control link by the engagement of said retainer means in said horizontal slot as said chain guide member moves vertically to move said chain guide member along a combined horizontal and vertical path simultaneously with movement of said cutter chain carrying bar.

4,339,154

VEHICLE BRAKE SYSTEM

Ralph M. Duttarer; Michael H. Estkowski, and Russell P. Smith, all of St. Joseph, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jul. 3, 1980, Ser. No. 165,839
Int. Cl.³ B60T *13/22, 13/74*
U.S. Cl. 303—3 **10 Claims**



1. A vehicle brake system having a spring applied fluid pressure released actuator, a source supplying pressurized fluid to said actuator for brake release, and a two position valve in the fluid circuit between said source and said actuator having a brake applied position and a brake release position, comprising

a solenoid operated valve in said fluid circuit between said source and said two position valve maintaining the circuit normally closed,

a momentary contact switch for closing an electrical circuit for energizing said solenoid and moving said solenoid operated valve to pressurize said brake actuator when said two position valve is in the brake release position,

a pressure sensor responsive to the fluid pressure in said actuator which closes a second electric switch when a predetermined pressure is reached in said sensor and

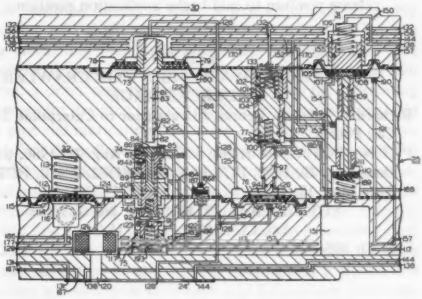
a connection from said second switch to said solenoid to maintain the solenoid energized even though said momentary contact switch is opened.

4,339,155

CONTROL VALVE ARRANGEMENT FOR COMBINED BRAKE AND AIR RESERVOIR DEVICE

James E. Hart, Trafford, Pa., assignor to American Standard Inc., Wilmerding, Pa.

Filed Oct. 8, 1980, Ser. No. 195,149
Int. Cl.³ B60T *15/32*
U.S. Cl. 303—38 **31 Claims**



1. Fluid pressure brake apparatus for a railway vehicle operative in response to variation of fluid pressure in a brake pipe of the vehicle comprising:

(a) a brake cylinder device including:

(i) a power cylinder;

(ii) a first piston in said power cylinder and cooperating therewith to form first and second chambers on opposite sides thereof;

(iii) a positioning cylinder having a diameter less than the diameter of said power cylinder;

(iv) a second piston in said positioning cylinder and cooperating therewith to form third and fourth chambers on the opposite sides thereof, said first and second piston abutments being interconnected; and

(v) biasing means for urging said first and second pistons in a brake release direction;

(b) application and release control valve means having a release position for effecting the charging of said first and second chambers with said brake pipe fluid pressure and the venting of said third chamber, whereby said biasing means is effective to move said first and second pistons to a brake release position;

(c) service valve means operative in response to a reduction of said brake pipe fluid pressure at either a service or emergency rate for effecting actuation of said application and release control valve means to an application position, whereby said charging of said first and second chambers and said venting of said third chamber is terminated and fluid pressure communication is established between said first and third chambers, whereby

said first and second pistons are moved from said brake release position to a brake application position;

(d) said application and release control valve means in said application position thereof further establishing fluid pressure communication between said first and second chambers to provide fluid pressure communication therebetween during said movement of said first and second pistons from said brake release position to said brake application position;

(e) transfer valve means operative in response to said fluid pressure in said third chamber exceeding a predetermined value for interrupting said fluid pressure communication between said first and third chambers and concurrently venting fluid pressure from said first chamber, whereby said first and second pistons exert a service braking force corresponding to the fluid pressure differential across each of the respective first and second pistons; and

(f) said transfer valve means being further operative, prior to said fluid pressure in said third chamber exceeding said predetermined value, for establishing fluid pressure communication between said first and second chambers to provide fluid pressure equalization therebetween during such time that fluid pressure communication is established between said first and third chambers following said movement of said first and second pistons from said brake release position to said brake application position.

4,339,156

ROLLER-IDLER ASSEMBLY FOR CRAWLER UNDERCARRIAGE

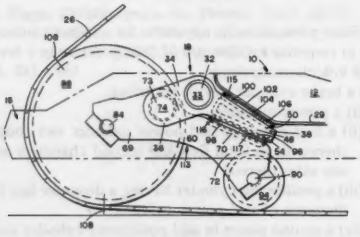
Richard E. Livesay, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US80/01118, § 371 Date Aug. 29, 1980, § 102(e) Date Aug. 29, 1980, PCT Pub. No. WO82/00810, PCT Pub. Date Mar. 18, 1982

PCT Filed Aug. 29, 1980, Ser. No. 261,113

Int. Cl.³ B62D *55/10, 55/30*

U.S. Cl. 305—22 **12 Claims**



1. A mounting assembly (113) for an idler (88) and a roller (94) of an endless track vehicle having a track roller frame (12) comprising:

a support link (34) having an aft end (36) and a fore end (38) pivotally connected at a support link pivotal connection (32) intermediate its ends (36,38) to said frame (12);

means (100) for limiting upward rotation of the support link fore end (38);

a bogie link (60) having an aft end (69) on which is mounted said idler (88) by an idler axle (84) and a fore end (72) rotatably mounting said roller (94) said bogie link (60) being pivotally connected intermediate its ends (69,72) to the aft end (36) of said support link (34) at a bogie link pivotal connection (73); and

means (48,70,98) interposed between the fore end (38) of said support link (34) and the fore end (72) of said bogie link (60) for resiliently cushioning upward movement of said roller (94) and downward movement of said idler (88).

4,339,157

LINEAR MOTION ROLLING BEARING

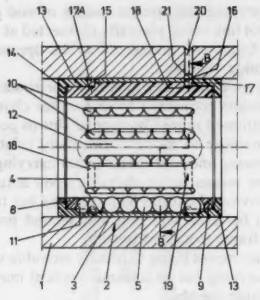
Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim; Lothar Walter, Schweinfurt, and Horst M. Ernst, Eltingshausen, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Mar. 27, 1980, Ser. No. 134,493

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 7911040[U]

Int. Cl.³ F16C *29/06*

U.S. Cl. 308—6 C **8 Claims**



1. In a linear motion rolling bearing including an outer sleeve with outer end faces and a bore, a cage seated in said bore with a plurality of circumferentially distributed endless channels, a plurality of rolling elements in said channels, each channel being comprised of axial races for the rolling elements under load and not under respectively, semicircular turnarounds connecting said races with each other in pairs, a plurality of rolling elements filling said channels, and two end rings, each covering one end of the cage radially on the outside and each having an inner end closely adjacent one of the corresponding outer end faces of the outer sleeve, the improvement of lubricant supply means for the rolling elements in said channels comprising at least one aperture extending radially inward and defined by a recess in at least one of said adjacent end faces of said outer sleeve and one end ring, said improvement further comprising a passage extending circumferentially between each two adjacent endless channels and formed between the outer periphery of the cage and the adjacent outer surface of at least one of the outer sleeve and end ring elements, said aperture communicating with said passage and thence with the endless channels that said passage extends between.

4,339,158

END CAP ASSEMBLIES FOR CONVEYOR ROLLERS

Brian Greener, Welwyn Garden City, and Simon J. Pedder, Luton, both of England, assignors to SKF (U.K.) Limited, Bedfordshire, England

Filed Mar. 10, 1980, Ser. No. 128,893

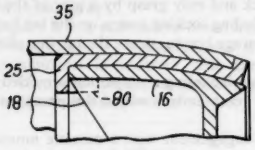
Claims priority, application United Kingdom, Mar. 9, 1979, 7908393; Dec. 21, 1979, 7944104

Int. Cl.³ F16C *35/04, 35/12;* B65G *13/00*

U.S. Cl. 308—20 **11 Claims**

1. An end cap assembly for a roller tube of a conveyor roller, comprising a substantially rigid annular housing, a collar mounted on and surrounding the housing, the collar being of a size to be a sliding fit within an end of the roller tube and form a support therefor, and a bearing for rotatably mounting the assembly on a shaft, wherein the housing has an axially extending inner wall and an axially extending outer wall, the outer surface of said outer wall being curved radially inwards in an axial direction of the housing over at least part of the length of said outer wall so that the housing has a larger diameter end

and a smaller diameter end, the bearing is mounted as a force fit in the bore defined by said inner wall of the housing, and the collar has an inwardly projecting radial flange at one end thereof and an outwardly projecting radial flange at the other end thereof, said collar being mounted as a close fit on said larger diameter end of the housing with the inwardly projecting flange abutting said larger diameter end of the housing and the remainder of the collar spaced radially from said curved outer wall of the housing and movable radially inwards against



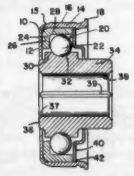
its own resilient resistance to deformation into abutting contact with said curved outer wall of the housing, whereby the end cap assembly may be firmly secured in an end of the roller tube by positioning the assembly in the tube with the outwardly projecting radial flange abutting the end of the tube and swaging the end of the tube radially inwards so as to force the collar against the housing with at least part of the collar lying along the curved outer surface of the outer wall and deformed to the curvature thereof and the end portion of the roller tube lying along the curved collar and deformed to the curvature thereof.

4,339,159

CONVEYOR ROLLER BEARINGS

Donald A. Miller, 7315 Glastonbury Dr., Hudson, Ohio 44236

Filed Sep. 8, 1980, Ser. No. 184,640
Int. Cl.³ F16C *13/00*
U.S. Cl. 308—20 **5 Claims**



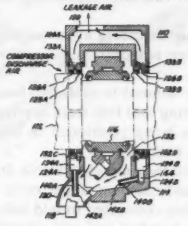
1. Conveyor bearing apparatus for registration in the end of a cylindrical tubular roller of a conveyor having an inner race, an outer race and discrete bearing elements positioned between the inner race and outer race for reducing friction in relative rotation between the inner race and outer race, casing means on one of the races for connecting the race to an object to be rotated with respect to the other of said races, the casing means and the object to be rotated having complementary concentric mounting surfaces, said casing is mounted radially outward on the outer race, one of said complementary surfaces being a cylindrical outer race of said casing, said casing having first and second axial ends, said first end has a radially outward extending flange, said second end comprises a radially inward extending rim and wherein the outer race is supported axially against the inward extending rim and said outer race has a cylindrical surface supported radially by a complementary cylindrical portion of the casing, the improvement comprising: a plurality of substantially parallel axially extending extensions formed integrally on said casing, said extensions are inwardly tapered toward said radially inward extending rim and terminates short of said radially inward extending rim and flares circumferentially into said radially outward extending flange whereby an interference fit is effected between said conveyor roller bearing and the inner cylindrical surface of said cylindrical tubular roller.

4,339,160

SEALING ARRANGEMENT FOR HOT BEARING HOUSINGS

James D. McHugh, 1152 Rosehill Blvd., Schenectady, N.Y. 12309

Filed Jan. 12, 1981, Ser. No. 224,323
Int. Cl.³ F16C *33/74*
U.S. Cl. 308—36.3 **13 Claims**



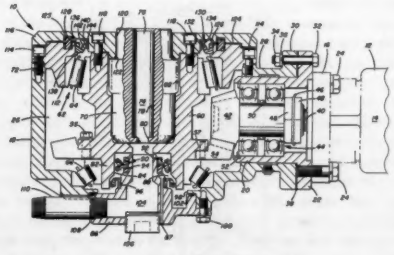
1. A machine having a shaft, a journal bearing rotatably supporting said shaft, said bearing having a bearing housing and a lubricating fluid sump within the housing, a feed tube supported to the housing for feeding lubricating fluid to said bearing, a drain pipe in communication with the lubricating fluid sump for draining lubricating fluid from said bearing, said drain pipe and lubricating fluid sump together defining a lubricating fluid drain flow path, first seal means about the shaft for minimizing lubricating fluid leakage from said bearing to outside of said bearing housing, and a first leakage drain tube for receiving lubricating fluid which has leaked at least partially past said first seal and for carrying said leaked lubricating fluid to said drain flow path, said first leakage drain tube having a first end supported to said bearing housing and a second end extending into said drain flow path, said first leakage drain tube adapted to be cooled by lubricating fluid in said drain flow path.

4,339,161

BEARING SEAL FOR A DRILL HEAD ASSEMBLY

Francis A. May, Pittsburgh, Pa., assignor to Consolidation Coal Company, Pittsburgh, Pa.

Filed Aug. 11, 1980, Ser. No. 176,645
Int. Cl.³ F16C *33/78*
U.S. Cl. 308—187.1 **15 Claims**



1. A drill head assembly comprising,
a drill housing having a chamber,
said chamber including an upper open end portion and a lower end portion,
a rotatable drill retaining member positioned in said drill

housing chamber and extending through said chamber upper open end portion,

a hub member positioned in surrounding coaxial relation with said rotatable drill retaining member,

said hub member and said rotatable drill retaining member being drivingly connected,

a drive means secured to said hub member for transmitting rotation through said hub member and said rotatable drill retaining member,

sealing means positioned in said chamber adjacent said lower open end portion thereof and abutting said hub member for sealing said chamber lower open end portion,

bearing means for rotatably supporting said hub member in said chamber,

said bearing means including a first main bearing positioned in said chamber adjacent said upper open end portion thereof,

a bearing carrier secured to said drill housing, said bearing carrier supporting said first main bearing in said chamber,

said drive means being positioned in said chamber below said first main bearing,

a cover plate surrounding said rotatable drill retaining member to close said chamber upper open end portion, said cover plate being connected to said hub member to rotate with said hub member and said rotatable drill retaining member,

an annular seal device sealingly engaging said bearing carrier above said first main bearing between said first main bearing and said cover plate,

said annular seal device being operable to seal said chamber upper end portion from the entrance of foreign matter therein and to prevent the escape of lubricant from said chamber,

load stress relieving means for preventing wear of said cover plate,

said load stress relieving means being positioned between said cover plate and said annular seal device and including a first surface abutting said cover plate and a second surface abutting said annular seal device, and

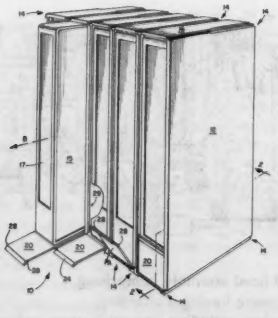
said load stress relieving means being rotatable with said cover plate to prevent wear forces from being applied to said annular seal device and failure of the seal maintained at said chamber upper open end portion.

4,339,162

VIDEO CASSETTE STORAGE BOX

Anthony L. Gelardi; Paul J. Gelardi, both of Cape Porpoise, and Robert B. MacLeod, Jr., Kennebunkport, all of Me., assignors to Shape, Inc., Biddeford, Me.

Filed Feb. 28, 1980, Ser. No. 125,446
Int. Cl.[3] A47B *81/06*; F16B *12/00*
U.S. Cl. 312—10 **7 Claims**



1. A cassette storage device comprising:

a one-piece box having an opening along one area thereof;

a tray slidably mounted in said box for movement in and out of said opening;

pivotally mounted opening and closing means provided with said tray for association with the box opening;

limit means provided with each tray for determining the amount that said tray can be moved out of said opening;

the opening and closing means including a movable tab pivotally connected to the slidable tray by a flexible hinge portion;

the movable tab being provided with a handle portion to enable quick and easy grasp by a user of the device, and further including locking means on the tab for association with the storage box to secure the tab in a closed position thereof;

said limit means including a projection provided on the slide tray which complements with a slot provided in the storage box;

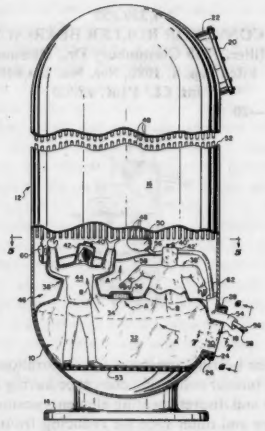
a tongue for engagement with a cassette mounted on said tray, and a recessed portion provided within said storage box for complementary reception of said tongue therewithin.

4,339,163

BAG-LIKE CONTAMINANT CONTROL WORK MODULE

Earl B. Jacobson, Crystal Lake, Ill., and H. F. Buchanan, Port St. Lucie, Fla., assignors to Nuclear Power Outfitters, Crystal Lake, Ill.

Filed Apr. 4, 1980, Ser. No. 137,124
Int. Cl.[3] A61B *19/00*; G21C *11/00*
U.S. Cl. 312—1 **9 Claims**



1. A contaminant control work module comprising:

bag-like flexible membrane means having a first passageway in said membrane means of a size to permit passage of a worker therethrough and a shape and size adapted, when inflated by a pressure differential, to substantially enclose at least one worker therein;

filter means in said membrane means to allow air flow through said membrane means only in one direction from said passageway through said membrane means;

at least one glove box means in said membrane means having a head piece, said head piece having substantially transparent portions therein and a pair of glove fitted arm extensions adapted for a worker to fit therein to work in said membrane means shielded from outside contaminants;

each said head piece including separate filter means therein to provide air flow through each said glove box means only in one direction from said passageway through said membrane means;

said membrane means are adapted to be placed in a substan-

tially enclosed contaminant containing workspace through workway portal means opening into said workspace, said workspace having a predetermined configuration and being defined by an upper and lower portion therein, said membrane means when inflated substantially filling said lower portion of said workspace and allowing said glove box means to be moved about said upper portion;

said first passageway having means adapted to be secured around said portal means to secure said membrane means in said workspace while allowing workers to pass through said first passageway;

said workspace is in a radioactive environment; and

said membrane means are collapsible and invertible to contain contaminants in contract with the other surface thereon when said membrane means are removed from said workspace and disposed of.

4,339,164

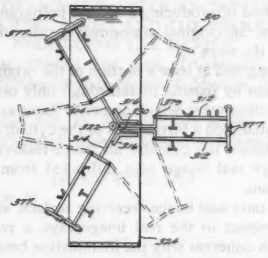
ARTICLE SUPPORTING ASSEMBLY

Stephen T. Spevak, Germantown, Md., assignor to Potomac Applied Mechanics, Inc., Bethesda, Md.

Division of Ser. No. 38,719, May 14, 1979, Pat. No. 4,286,832, which is a continuation-in-part of Ser. No. 907,321, May 18, 1978, Pat. No. 4,170,392. This application Aug. 1, 1980, Ser. No. 174,699

Int. Cl.³ A47B *97/00, 81/00*

U.S. Cl. 312—283 **23 Claims**



1. An article supporting assembly comprising a center structure; at least two cover plates; article supporting structures formed on at least one of the center structure and the cover plates; at least two spanners comprising hollow prisms having article supporting drawers formed therein; first hinges for connecting the cover plates to the spanner prisms so that the cover plates are pivotal with respect to the spanner prisms; second hinges for connecting the spanner prisms to the center structure so that the spanner prisms are pivotal with respect to the center structure; and said first and second hinges being formed along opposed edges of each of said spanner prisms.

4,339,165

CONNECTOR PROTECTIVE DEVICE AND CONNECTOR PROVIDED WITH SUCH A PROTECTIVE DEVICE

Christian Malsot, and Michel Guerrero, both of Suresnes, France, assignors to Socapex, Suresnes, France

Filed Jun. 19, 1980, Ser. No. 160,845

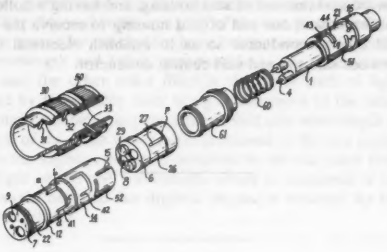
Claims priority, application France, Jun. 20, 1979, 79 15803

Int. Cl.³ H01R *13/44*

U.S. Cl. 339—41 **13 Claims**

1. A connector protective device for protecting an end of a connector having two disconnected ends, each end including an insulating unit exhibiting a front contact face having a longitudinal axis perpendicular thereto, and a plurality of spacially arranged contact elements projecting from said face, said device comprising for each said end:

two disks including an outside disk and an inside disk respectively centered on said longitudinal axis, disposed parallel to the contact face, and having openings of the same spacial arrangement as the contact elements, and capable, on the one hand, of rotational movement in relation to one another about said longitudinal axis between a first angular position in which said contacts are uncovered by said two disks aligned with said openings, and a second angular position in which said contacts are covered by said two



disks aligned with said openings, and on the other hand, of translational movement along said axis perpendicular to the contact face, placing the projecting elements in a position through said openings when said disks are in said first angular position,

said device further comprising control means, limiting said rotational movement and said translational movement to a preestablished order.

4,339,166

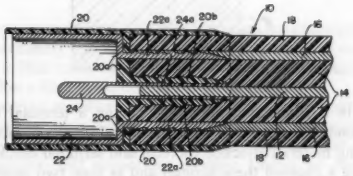
CONNECTOR

John P. Dayton, 10707 Camarillo, Apt. 105, Toluca Lake, Calif. 91602

Filed Jun. 19, 1980, Ser. No. 161,039

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—100 **4 Claims**



1. A connector for mounting on the end of a coaxial shielded cable of the type having a central conductor surrounded by an inner dielectric sleeve which, in turn, is surrounded by a tubular braided conductor, the tubular braided conductor being surrounded by an outer dielectric sleeve, said connector comprising: a tubular housing formed of insulating material, said housing being open at each end and having an inner diameter corresponding to the outer diameter of the coaxial cable for receiving the coaxial cable through one end of said housing, said tubular housing having an intermediate partition therein against which the end of the coaxial cable abuts, and said partition having a central tubular portion extending coaxially towards said one end of the tubular housing and having an inner diameter corresponding to the outer diameter of the central conductor of the cable and in a position to extend between the inner surface of said inner dielectric sleeve and the outer surface of said central conductor to receive the end of the central conductor, said tubular portion having a plurality of external barbs thereon for engaging the inner surface of said

inner dielectric sleeve; an electrically conductive insert mounted in said housing and having at least one prong extending through said partition toward said one end of said housing in position to extend between said tubular braided conductor and said inner dielectric sleeve to engage and establish electrical contact with said braided conductor; and an electrically conductive pin mounted in said central partition and extending coaxially within said housing toward the other open end thereof, and said pin also extending into said tubular portion toward said one end of said housing, and having a hollow end portion at said one end of said housing to receive the end of said central conductor so as to establish electrical contact between said pin and said central conductor.

4,339,167

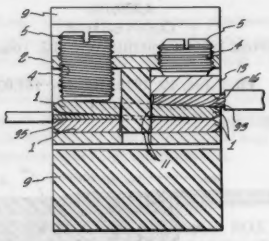
FLAT CONDUCTOR TO ROUND CONDUCTOR CONNECTION SYSTEM

David W. Liedholm, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 937,889, Aug. 29, 1978, abandoned. This application Mar. 13, 1980, Ser. No. 129,896

Int. Cl.³ H01R *9/10*

U.S. Cl. 339—272 A **3 Claims**



1. In a connection apparatus having a terminal block of nonconducting material with a terminal block contact of conducting material attached thereto, said terminal block contact having a channel therethrough and at least two positions for receiving conductors and having clamp means for clamping said conductors to said terminal block contact at each position for receiving conductors, the improvement which comprises:

a contoured clamp pad not connected to said clamp means and having a surface conforming to the shape of a nonflat conductor for disposition between said clamp means and such nonflat conductor for transmitting clamping pressure from said clamping means to the surface of such a nonflat conductor, said contoured clamp pad being sized to fit within said channel and extend over only a first portion of the length of the channel so that a second portion of the terminal block contact can be used for a flat conductor; and

two flat connection plates sized to fit within said channel and extend over the length thereof and adapted so that a flat conductor can be clamped between the plates in the second portion of the channel, the flat connection plates being positioned so that the non-flat conductor can be clamped between the contoured clamp pad and one of the plates.

4,339,168

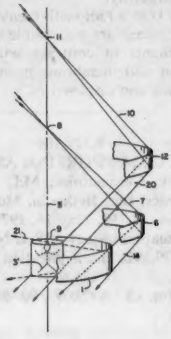
HOLOGRAMS CREATED FROM CYLINDRICAL HOLOGRAM MASTERS

Kenneth A. Haines, San Jose, Calif., assignor to Eidetic Images, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 875,172, Feb. 6, 1978, abandoned, and Ser. No. 922,228, Jul. 5, 1978, abandoned. This application Dec. 10, 1979, Ser. No. 102,430

Int. Cl.³ G03H *1/20, 1/26*

U.S. Cl. 350—3.69 **50 Claims**



1. A method of producing a second hologram from at least a portion of an original transmissive cylindrical hologram comprising the steps of:

illuminating said at least a portion of the original cylindrical hologram by passing therethrough only once a coherent illumination wave which comes to focus as a line located substantially on a virtual axis of the cylindrical hologram,

placing within the cylinder an image-receiving surface to intercept real image rays diffracted from said original hologram,

directing onto said image-receiving surface, at a finite angle with respect to the real image rays, a reference wave which is coherent with the illumination beam of the original hologram, thereby producing a pattern of interference fringes on the image-receiving surface, and

detecting and recording as a second hologram said interference fringes.

4,339,169

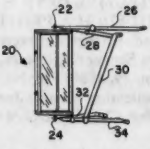
REAR VIEW MIRROR AND WIPER ASSEMBLY FOR VEHICLES

Kenneith F. Addison, Jr., P.O. Box 27291, Tulsa, Okla. 74127

Filed Feb. 8, 1980, Ser. No. 119,668

Int. Cl.³ B60S *1/08, 1/24*

U.S. Cl. 350—61 **10 Claims**



1. A rear view mirror and wiper assembly including

(a) a frame member of elongated rectangular shape

(b) a mirror of elongated rectangular shape

(c) means for mounting said mirror in spaced adjacent relation to one face of said frame member

(d) power means centrally mounted on the rear face of said

frame member and having an output shaft extending through the frame member into the space between said frame member and mirror

(e) a crank arm, one end of which is fixedly connected to said output shaft to effect circular motion of the crank arm

(f) a ball bearing rotatably mounted on the opposite end of said crank arm

(g) a reciprocating member extending longitudinally of said mirror and frame member and comprising a scotch yoke type mechanism including an arm having a longitudinal slot in which said ball bearing is mounted for effecting rolling engagement of the latter with the arm upon rotation of said crank arm

(h) a wiper blade in wiping engagement with the outer face of said mirror

(i) means connecting the ends of said wiper blade to the ends of said reciprocating member whereby, upon actuation of said power means, said arm is rotated and said reciprocating member and wiper blade are moved in a reciprocating transverse motion to effect wiping of the mirror

(j) guide shafts extending transversely of said frame member and mirror in parallel spaced relationship and extending through the end portions of said reciprocating member, and

(k) linear motion bearings interposed between said guide shafts and reciprocating member for facilitating transverse movement of the latter.

4,339,170

OPTICAL DEVICE FOR FREQUENCY-SELECTIVE DISTRIBUTING LIGHT AND THE PROCESS OF PRODUCING THE DEVICE

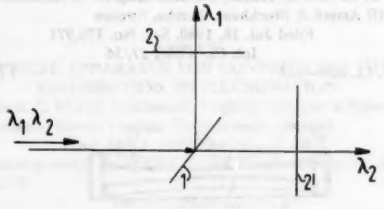
Gerhard Winzer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

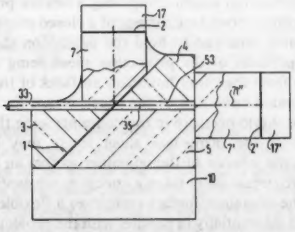
Filed Aug. 15, 1979, Ser. No. 66,694

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1978, 2840493

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.16 **33 Claims**





1. In an optical device for frequency selectively distributing light by separating light of one wavelength from light of another wavelength, particularly for demultiplexers in optical waveguide systems, said device comprising means for guiding a beam of light, beam divider means for selectively dividing the beam into a pair of partial beams of different wavelengths, said beam divider means being a frequency-selective divider layer being disposed obliquely with respect to the direction of incident light in said means for guiding, said divider layer passing the greatest part of the light of the one wavelength in one of the pair of partial beams and reflecting the greatest part of the light of the other wavelength in the other of the pair of partial beams, one color filter being disposed in the path of the one partial beam, and another color filter disposed in the path of the other partial beam, the improvements comprising the one color filter disposed in the one path of the one partial beam of the light passed by the divider layer being transmissive to the one wavelength and being impermeable to the other wavelength and the other color filter in the other path of light reflected by the divider layer being transmissive to the other wavelength and being impermeable to said one wavelength so that light of the other wavelength contained in the one partial beam to the slightest degree is removed by the one color filter while light of the one wavelength which is contained in the other partial beam to the slightest degree is removed by the other color filter.

4,339,171

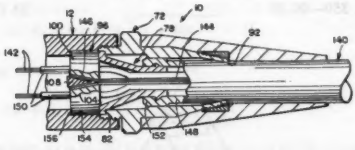
FIBER OPTIC CABLE RETAINER MEMBER

John A. Makuch, Danbury, and Kevin J. Monaghan, Middlebury, both of Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Division of Ser. No. 879,186, Feb. 21, 1978. This application Mar. 4, 1980, Ser. No. 127,191

Int. Cl.³ G02B *5/14*

U.S. Cl. 350—96.20 **2 Claims**



1. A retainer member for securing strength members extending longitudinally through the center of a plurality of optical fibers in a fiber optic cable against rearward movement in a bore within a fiber optic connector comprising:

a supporting member disposed within said bore, said supporting member having a plurality of spaced slots supporting said optical fibers in said bore within said fiber optic connector, said supporting member having an opening extending therethrough for receiving forward ends of said strength members; and

a confining member adapted for insertion into said opening in said supporting member to tightly confine said forward ends of said strength members against rearward movement in said bore within said fiber optic connector.

4,339,172

CONNECTOR HAVING A SINGLE SEGMENTED DEFORMABLE GRIP MEMBER FOR OPTICAL CABLES

Russell A. Leather, Perth, Scotland, assignor to Ferranti Limited, Cheadle, England

Filed Mar. 31, 1980, Ser. No. 135,632

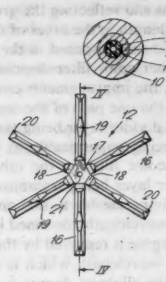
Claims priority, application United Kingdom, Mar. 31, 1979, 7911357

Int. Cl.³ G02B *5/172*

U.S. Cl. 350—96.21 **6 Claims**

1. A connector for connecting together two light-transmitting cables such that the optical axes of the adjacent ends of the cables are aligned with one another, which includes a body member having a bore of regular cross-section, a sleeve of

elastomeric material located within the bore, a single segmented deformable grip member located within the sleeve and into which the ends of both of the cables may be inserted, and means for applying axial compression forces to the sleeve so as



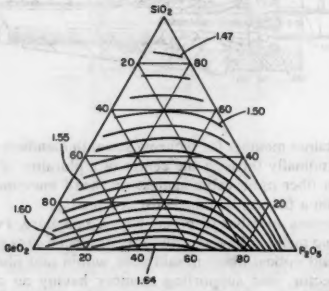
to cause the grip member to contract in a radial direction and grip each of the cables at a number of equally-spaced points around its periphery so as to maintain the ends of the cables in axial alignment.

4,339,173

OPTICAL WAVEGUIDE CONTAINING P_2O_5 AND GEO_2

Ishwar D. Aggarwal, Northboro, Mass., and Eric N. Randall, Cheshire, Conn., assignors to Corning Glass Works, Corning, N.Y.

Filed Sep. 8, 1975, Ser. No. 611,226
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.30 **18 Claims**



10. An optical waveguide comprising a core of glass formed of phosphorous pentoxide, germania and silica and a cladding of a glass of a lower refractive index than the core.

4,339,174

HIGH BANDWIDTH OPTICAL WAVEGUIDE

Philip S. Levin, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

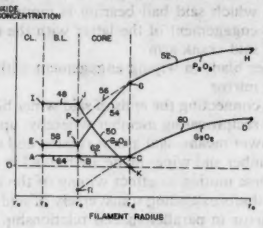
Filed Feb. 1, 1980, Ser. No. 117,391
Int. Cl.³ G02B *5/172*
U.S. Cl. 350—96.31 **23 Claims**

1. A gradient index optical waveguide filament having a bandwidth of at least 700 MHz, said filament comprising

an outer cladding layer,

a barrier layer disposed on the inside wall surface of said cladding layer, said barrier layer comprising SiO_2, GeO_2, B_2O_3 and P_2O_5, the concentration of each of said SiO_2, GeO_2, B_2O_3, and P_2O_5 being substantially uniform throughout the thickness of said barrier layer, and

a core of high purity glass having a gradient index of refraction disposed within said barrier layer and adhered thereto to form an interface therebetween, said core consisting essentially of SiO_2, B_2O_3, P_2O_5 and GeO_2, the quantity of B_2O_3 decreasing within said core from the barrier layer level to zero at a radius r_d which is located between 0.75 and 0.9 times the core radius r_a, the concentration gradient of P_2O_5 and GeO_2 substantially following a power law curve between said radius r_d and the filament axis, the

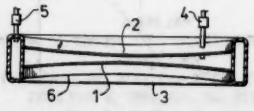


concentration of P_2O_5 in said core at radii between r_a and r_d increasing from the concentration thereof in said barrier layer to the concentration thereof at said radius r_d at a rate greater than the concentration of P_2O_5 would increase if said power law P_2O_5 gradient extended into said region between radii r_a and r_d, and the concentration of said GeO_2 between radii r_d and r_a being constant and equal to or less than the barrier layer level of GeO_2.

4,339,175

PROJECTION SCREEN

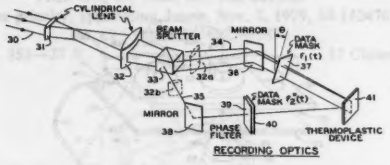
Ulf J. E. Asterö, Tumba, Sweden, assignor to Asthausbolagen HB Asterö & Stockhaus, Tumba, Sweden

Filed Jul. 18, 1980, Ser. No. 170,971
Int. Cl.³ C03B *21/56*
U.S. Cl. 350—125 **7 Claims**

1. A projection screen comprising a flexible projection sheet which forms a boundary surface of a closed container comprising a frame arranged to hold the projection sheet distended, central portions of the projection sheet being arranged at a distance from the other boundary surfaces of the container in the distended condition of the sheet, means for establishing a subatmospheric pressure in the container such that the central portions of the projection sheet freely may be sucked in towards the interior of the container so that an image surface of the projection sheet takes a concave, substantially spherical shape, the container further comprises a flexible foil which is arranged substantially in parallel with the projection sheet, said foil constitutes a projection surface, the frame being arranged to hold the sheet at a distance from the foil, and the frame includes a closed annular tube of flexible material and means for permitting inflation of the frame such that the frame can be pressurized to be stiffened and hold both the sheet and the foil distended.

4,339,176
HOLOGRAPHIC SPACE-VARIANT SYSTEM FOR EVALUATING THE AMBIGUITY INTEGRAL

Tzuo-Chang Lee, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed May 19, 1980, Ser. No. 150,777
Int. Cl.³ G02B 27/46; G01S 13/58; G06G 9/00
U.S. Cl. 350—162 SF 11 Claims



1. A holographic system utilizing a beam of substantially coherent light to create a hologram useful in evaluating an ambiguity function arising from a first signal and a second signal, said light beam following a light beam path, and said system including a recording means comprising:

a cylindrical Fourier Transform lens means in said light beam path and having a Fourier Transform plane associated with said Fourier Transform lens means;

a substantially planar, first data mask coded with said first signal and a substantially planar, second data mask coded with said second signal, said data masks positioned in said light beam path between said Fourier Transform lens means and said Fourier Transform plane, the normal to said first data mask forming a first angle with said light beam path and the normal to said second data mask forming a second angle with said light beam path, said first and second angles being nonequal angles; and

a holographic recording medium positioned in said Fourier Transform plane associated with said cylindrical Fourier Transform lens means for recording a joint Fourier Transform.

4,339,177
OPTICAL APPARATUS FOR CONTROLLING THE DISTRIBUTION OF ILLUMINATION

Adrian A. C. March, Swaineshill, England, assignor to Solartron Electronic Group Limited, Farnborough, England

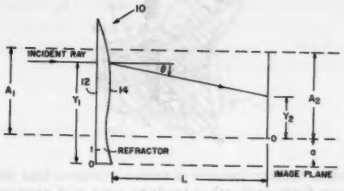
Filed Apr. 4, 1979, Ser. No. 27,140
Claims priority, application United Kingdom, Apr. 11, 1978, 14062/78
Int. Cl.³ G02B 13/20
U.S. Cl. 350—431 2 Claims

1. Optical apparatus comprising a source of visible or near-visible radiation, means arranged to determine the effective size and shape of the source and to provide a predetermined distribution of illumination, means to control the spatial distribution of ray transmission through at least one transverse plane in the apparatus, and a functional lens-element group in which a first element has moderate negative power and non-minimum negative spherical aberration and a second element has positive power of larger absolute magnitude than said negative power and positive spherical aberration of smaller absolute magnitude than said negative spherical aberration.

4,339,178
LOG-LOG SCALE REFRACTOR

James L. Smith, Grand Prairie, Tex., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 9, 1980, Ser. No. 158,008
Int. Cl.³ G02B 13/18
U.S. Cl. 350—432 2 Claims



1. A logarithmic scale refractor comprising:

(a) a body transparent to a predetermined wavelength of electromagnetic radiation;

(b) a first surface of said body being planar;

(c) a second surface of said body having a predetermined curved configuration to define a body of varying thickness whereby the body refracts collimated light, incident parallel to its axis, in such a manner that the coordinates of a ray intersecting an image plane a distance L from the lens are logarithmically related to the coordinates in the plane of the refractor, said second surface being defined by

$$\tan \phi_i = \tan \theta/(n\sqrt{1+\tan^2\theta}-1),$$

where

$$\tan \phi = -(y_1 - a - (A_1/A_2)\log y_1)/L$$

and where y_1 is in the refractor plane, y_2 is in the image plane, A_1 and A_2 are arbitrary equal distances measured in terms of y_1 and y_2 units, a=displacement between origins in the lens and image planes while L is the separation between the refractor and image planes, both A and L being measured in the same units as y_1, ϕ=the angle through which the lens bends the incident ray, ϕ_i and ϕ_o are the angles of ray incidence and exit with respect to the curved surface normal N, and n is the refractive index of the lens material.

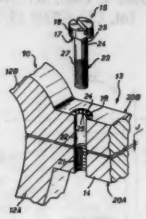
4,339,179
EYEGLASS FRAME HAVING OPEN RIMS CLOSED BY SELF-LOCKING SCREW ASSEMBLIES WITH DOG CLUTCH MEANS

Jean Dany, Bar-le-Duc, France, assignor to Essilor International "Cie Generale d'Optique", Creteil, France

Filed May 20, 1980, Ser. No. 151,578
Claims priority, application France, May 22, 1979, 79 12942
Int. Cl.³ G02C 5/22, 1/08
U.S. Cl. 351—153 14 Claims

1. An eyeglass frame part comprising at least one open rim for receiving a lens, superposed lugs being formed at the open ends of said rim, said rim being of resilient construction and biassing said lugs away from each other so as to define a gap constantly therebetween and a screw assembly for bringing said lugs toward each other and clamping a lens in said rim, said screw assembly including a machine screw having a head and a threaded shank, a nut member threadedly engageable with said threaded shank, and an insert member interposed between said head of said machine screw and said nut member, the underside of said head and said insert member defining

cooperable transverse bearing surfaces, cooperable dog clutch means formed on said bearing surfaces, said nut member being formed on one of said lugs and said insert member being formed on the other of said lugs whereby the biassing of said



lugs away from each other tends to urge said cooperable dog clutch means into mutual engagement and the constant gap between said lugs insures resiliency of such mutual engagement.

4,339,180

MOTION PICTURE CAMERA WITH FILM MARKING MEANS

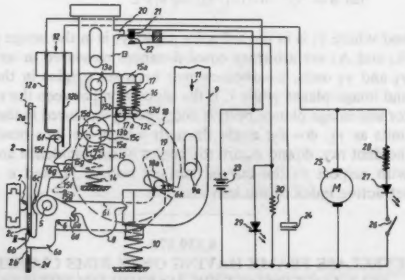
Friedrich Stumpf, and Thomas Scheller, both of Munich, Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,426

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1980, 3014099

Int. Cl.³ G03B *21/50*

U.S. Cl. 352—92 **10 Claims**



1. In a photographic apparatus of the type having a shutter, an arrangement for driving the shutter including a motor, and a source of energy for the motor, the combination of signal generating means operative to produce identification markings on portions of a film in the camera, including a light-emitting diode having a predetermined threshold excitation value, a storage capacitor, and a resistor connected in parallel with said diode and having a resistance which is high relative to the resistance of said diode when an electrical discharge from said capacitor has a value above said threshold value but is low relative to the resistance of said diode when said electrical discharge has a value below said threshold value; and actuating means for connecting said storage capacitor with the source while the motor is deenergized and operative to disconnect said storage capacitor from the source and to connect the storage capacitor directly in serie with said light-emitting diode preliminary to completion of the circuit of the motor.

4,339,181

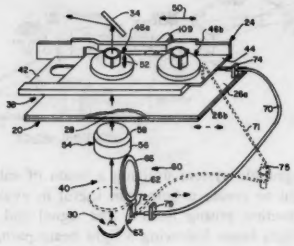
LENS ARRANGEMENTS FOR MICROFICHE READER ASSEMBLY AND METHOD

William T. Link, Berkeley, and Stephen Hobson, Santa Clara, both of Calif., assignors to Datagraphix, Inc., San Diego, Calif.

Filed Mar. 4, 1980, Ser. No. 127,230

Int. Cl.³ G03B *21/14, 3/00*

U.S. Cl. 353—27 R **11 Claims**



1. In a microfiche reader including means for supporting a microfiche in a given area and a projection screen, said microfiche supporting means including upper and lower confronting horizontal support plates for containing a microfiche therebetween, an optical arrangement for providing an image of a segment of said microfiche on said screen, said arrangement comprising:

(a) means including a light source for directing a beam of light along a predetermined path through said given area and towards said screen;

(b) a condenser lens assembly including first and second condenser lens means and means movable between a first and second position for alternatively optically coupling said first and second lens means with said beam at a location optically between said light source and said given area;

(c) a projection lens assembly including first and second projection lens means and means movable between a first and second position for alternatively optically coupling said first and second projection lens means with said beam at a location optically between said given area and said screen, said movable optical coupling means of said projection lens assembly including means for supporting said first and second projection lens means such that each of the latter when optically coupled with said beam rests on the top surface of said upper plate and is free to move vertically to a limited extent such that the upper plate if moved within said given area slides under the optically coupled projection lens means with the latter in continuous contact therewith; and

(d) means interconnecting the movable optical coupling means of said projection lens assembly with the movable optical coupling means of said condenser lens assembly for automatically moving the latter optical coupling means between its first and second position in response to the movement of the former optical coupling means between its first and second position, whereby said first projection and condenser lens means are optically coupled together with said beam and, alternatively, said second projection and condenser lens means are optically coupled together with said beam, said interconnecting means including a rigid wire having opposite transversely extending end sections one of which is fixedly attached at its end to the movable optical coupling means of the projection lens assembly and the opposite one of which is fixedly attached at its end to the movable optical coupling means of the condenser lens assembly, said wire including an intermediate section, said interconnecting means includ-

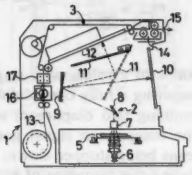
ing means for supporting said intermediate section for pivotal movement.

4,339,182

CONTROL SYSTEMS FOR MICROFILM READERS

Nobuo Ueda, Kanagawa, and Seiichi Yamagishi, Tokyo, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1980, Ser. No. 201,925
Claims priority, application Japan, Nov. 2, 1979, 54-142476
Int. Cl.³ G03B *27/48, 23/08*
U.S. Cl. 353—27 R **13 Claims**



1. In a microfilm reader including non-lockable input key means and drive means for moving a microfilm in response to a signal from selected one of the input key means and adapted to automatically transport the microfilm to bring the desired frame of the microfilm to a projecting position by specifying the frame with the input key means, a system for controlling the operation of the drive means comprising:

a memory circuit for storing the signal from the selected input key means while being energized,

means for converting the output signal from the memory circuit to an electric signal suited for operating the drive means, and

signal output means for producing an output signal equivalent to the signal emitted by depressing a specific input key means, upon application of power to the control system in operative relation thereto, whereby the microfilm is automatically transported to a predetermined position upon the application of power while no signal is given by the input key means and the memory circuit for specifying the position of the microfilm.

4,339,183

FILM READER

Yu Yamada, Kokubunji; Mutsuhiro Inoue, Sagamihara; Toshio Arai; Kokichi Omi, both of Kawasaki; Hiroaki Suzuki, Hachioji, and Tetsuro Kuwayama, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 884,536, Mar. 8, 1978, Pat. No. 4,229,085. This application Mar. 24, 1980, Ser. No. 132,879
Claims priority, application Japan, Mar. 10, 1977, 52-28856[U]; Apr. 11, 1977, 52-41092[U]
Int. Cl.³ G02B *3/08;* G03B *21/22, 21/60*
U.S. Cl. 353—78 **4 Claims**

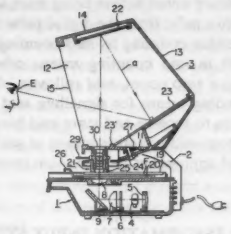
1. A film reader comprising:

a housing having an observation aperture;

means for illuminating a film having an image recorded thereon;

means for projecting an image of film illuminated by said illuminating means;

a reflection type screen obliquely disposed in said housing in opposition to said observation aperture for allowing an observer to observe an image of film projected by said projecting means, said screen having a number of concentrically arranged reflecting annular surfaces having inclination angles which increase in a direction away from a common center of the annular surfaces, and said screen having a saw-like cross-section, said adjacent reflecting surfaces being joined by risers;



wherein said common center is located outside said screen, and adjacent an edge of said screen which is in the neighborhood of said observation aperature;

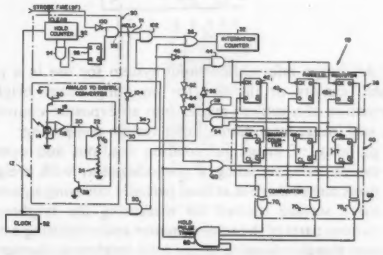
whereby said risers are not visible to the observer.

4,339,184

DIGITAL SAMPLE AND HOLD WITH ROLLOVER INHIBIT

Judy Bagdis, Bradford, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 5, 1980, Ser. No. 213,415
Int. Cl.³ G03B *7/091;* H03K *5/00*
U.S. Cl. 354—23 D **12 Claims**



1. An electrical circuit for sampling a digital pulse train signal and providing a replication thereof during a select holding period comprising:

means for counting a clock pulse of substantially higher frequency than the digital pulse train signal and for providing a binary count output signal representative of the pulses of said clock pulse so counted, said counting means also resetting to a zero count in response to each pulse in the digital pulse train signal;

means responsive to the digital pulse train signal for receiving said binary count output signal from said counting means immediately prior to each succeeding reset of said counting means to zero and for storing each of said received binary count signals until the next succeeding binary count output signal is received from said counting means;

means responsive to a hold signal for comparing the binary count signal stored in said receiving and storing means with the binary count output signal from said counting means and for providing an output pulse each time the binary count signal stored in said storing means matches the binary count output signal from said counting means thereby replicating the pulse train signal existent immediately prior to the hold signal, said comparing means further including means for providing a signal to reset said counting means to zero each time said binary count signal

stored in said receiving and storing means matches the binary count output signal from said counting means; and

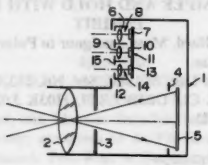
means responsive to said counting means counting up to its maximum binary count before being reset to a zero count in response to a pulse from the digital pulse train signal for inhibiting further counting by said counting means which would result in said counting means otherwise rolling over back to a zero count, said rollover inhibiting means further including means for signalling said receiving and storing means to receive and store said binary count output signal from said counting means as said binary count output signal approaches its maximum count.

4,339,185

IMAGE INFORMATION INPUT SYSTEM

Kenji Nakauchi, and Takaaki Terasita, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1980, Ser. No. 218,562
Claims priority, application Japan, Dec. 21, 1979, 54-166688
Int. Cl.³ G03B 7/08
U.S. Cl. 354—31 **21 Claims**



1. An image information input system for use in a photographic camera or the like for inputting image brightness information of a subject matter into an exposure control system, said image information input system comprising;

a plurality of image information read-out and operating means each including a photodetector, with weighting mask means thereon at least partially covering a photosensitive surface thereof for measuring the brightness of various parts of the subject matter and outputting a brightness signal indicative of the total brightness measured by the photodetector,

said plurality of image information read-out and operating means having different respective modes of light measuring for providing differently weighted brightness measurements of the subject matter, and

selecting means for selecting automatically the brightness measurement of one of said plurality of image information read-out and operating means according to the visual nature of the subject matter.

4,339,186

AUTOMATIC DIAPHRAGM CONTROL AND MIRROR RELEASE DEVICES FOR CAMERAS

Keiji Yamazaki, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 1, 1981, Ser. No. 259,764
Claims priority, application Japan, May 2, 1980, 55-57798
Int. Cl.³ G03B 7/095
U.S. Cl. 354—38 **10 Claims**

1. A camera, comprising diaphragm aperture means normally fully open and adapted to be stopped-down in response to a camera actuating operation;

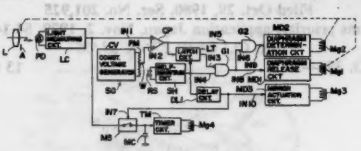
means for initiating a stopping-down operation of said diaphragm aperture means;

light measuring means for receiving scene light through the diaphragm aperture and generating a light measurement signal as a function of the received light;

means for generating a reference signal as a function of at least one manually set exposure parameter;

means for comparing said light measurement signal with said reference signal to generate a comparison signal;

control means coupled with said comparing means for generating a control signal when the light measurement signal generated before the initiation of said diaphragm stopping-



down operation is of a value, with respect to said reference signal, requiring a fully open diaphragm aperture;

means for determining said diaphragm aperture in accordance with the comparison signal generated with said diaphragm means being stopped-down; and

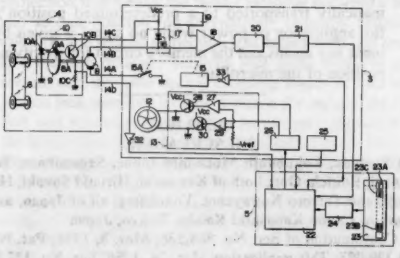
means for preventing the operation of said initiation means in response to said control signal.

4,339,187

PHOTOGRAPHING APPARATUS

Tsuyoshi Matsuura, Ina; Mamoru Aihara, Hachioji; Yutaka Takahashi, Hachioji, and Yoshio Nakajima, Hachioji, all of Japan, assignors to Olympus Optical Company Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,623
Claims priority, application Japan, Oct. 26, 1979, 54/137741
Int. Cl.³ G03B 1/18
U.S. Cl. 354—173 **5 Claims**



1. A photographing apparatus comprising

a receiver for receiving a film winding assembly which may be provided with either an automatic film winding mechanism which includes a motor to perform an automatic film winding operation or a manual film winding mechanism which permits a manual film winding operation;

means for detecting the operative condition of the motor in the automatic film winding mechanism whenever a film winding assembly which is provided with the automatic film winding mechanism is mounted in the receiver; and

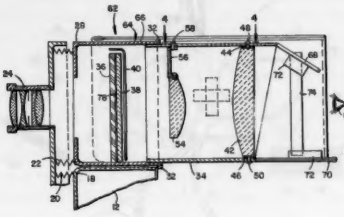
means responsive to an output signal from the detecting means for producing an output signal to said motor for discriminating whether there is mounted a film winding assembly provided with the automatic film winding mechanism or a film winding assembly provided with the manual film winding mechanism.

4,339,188

BRIGHT SCREEN OPTICAL VIEWER APPARATUS AND METHOD

Harry L. O. Smith, Cleveland, Tenn., assignor to Beattie Systems, Inc., Cleveland, Tenn.

Filed Mar. 23, 1981, Ser. No. 246,668
Int. Cl.[3] G03B *13/02, 3/00*
U.S. Cl. 354—219 14 Claims



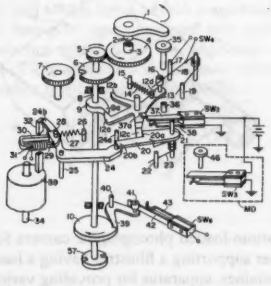
1. A bright screen optical viewer for an optical device having a viewing lens projecting a received image rearwardly to a viewing station, said viewer comprising, a Fresnel lens disposed intermediate said viewing lens and said viewing station, and a ground glass viewing screen, said screen being coated on one surface with a thin layer of optically clear material having an index of refraction of about 1.55 to 1.65 and at least a 95% transmission of visible spectrum light, and means for mounting said coated surface in abutting contact with said Fresnel lens without integrally uniting said surface and said Fresnel lens intermediate said Fresnel lens and said viewing station.

4,339,189

FILM ADVANCE RESTRAINING DEVICE OF A CAMERA

Yoshiyuki Nakano, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Jan. 19, 1981, Ser. No. 226,510
Claims priority, application Japan, Jan. 29, 1980, 55-8343; Jan. 29, 1980, 55-8344; Jan. 31, 1980, 55-11048[U]
Int. Cl.[3] G03B *1/00, 9/32*
U.S. Cl. 354—173 7 Claims



1. A film advance device of a camera having an exposure time control device and a focal plane shutter device including a forward curtain member for starting exposure and a rearward curtain member for terminating the exposure and charged with said film advance, said film advance device, comprising:

(a) a film advance shaft;

(b) a cam member operatively associated with said shaft;

(c) latch means displaceable between a position in which it is engaged with said cam member upon completion of the film advance of one frame and a position in which the engagement is released and adapted, when in the engaged position to restrain the operation of said cam member in the film advance direction;

(d) means for biasing said latch means in the direction toward said released position;

(e) means for restraining said latch means in the engaged position upon completion of the film advance; and

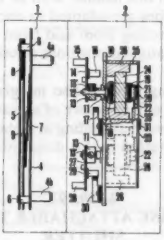
(f) means actuated in response to said exposure time control device to release the restraint of said latch means by said restraining means, said releasing means including a displaceable releasing member adapted to engage said restraining means after a predetermined amount of displacement from the time of said actuation and provided so as to hold said charged rearward curtain member and permit the operation of said rearward curtain member during said displacement.

4,339,190

ELECTROMAGNETICALLY DRIVEN FOCAL PLANE SHUTTER

Yoji Sugiura, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 8, 1981, Ser. No. 223,420
Claims priority, application Japan, Jan. 8, 1980, 55-659
Int. Cl.[3] G03B *9/36*
U.S. Cl. 354—234 4 Claims



1. A focal plane shutter assembly of the electromagnetically driven type, comprising:

a shutter blade unit consisting essentially of a shutter base plate with an exposure aperture opening, a cover plate provided near said base plate, with a leading shutter blade group and a trailing shutter blade group respectively positioned between said base plate and said cover plate and respectively comprising a plurality of thin plates and a shutter operating member link connected to said thin plates to hold said thin plates in a swingable manner and being adjusted to effect a prescribed operation; and

a shutter driving unit consisting essentially of a pair of electromagnetic driving sources which are so adjusted to produce a prescribed driving power and which respectively drive said leading shutter blade group and said trailing shutter blade group, a base plate supporting said electromagnetic driving sources and output shafts thereof, and a linking member which is attached to said output shafts and is so adjusted to effect a prescribed positional relationship with said shafts;

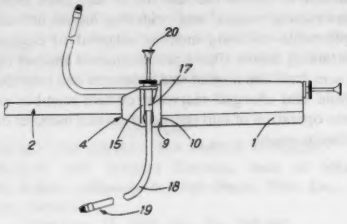
wherein said shutter assembly is arranged such that said shutter blade unit has support columns mounting said base plate of said shutter driving unit in a prescribed positional relationship and wherein both said units are combined so that the linking member of said driving unit engages with the shutter operating member of said shutter blade unit for operating said shutter assembly by operation of said electromagnetic driving sources.

4,339,191

MANEUVERING AND RELEASE DEVICE FOR CAMERA

Patrick P. Posso, Lausanne, Switzerland, assignor to GEFITEC S.A., Lausanne, Switzerland

Filed Sep. 8, 1980, Ser. No. 185,211
Claims priority, application France, Sep. 17, 1979, 79 23144
Int. Cl.[3] G03B *17/38*
U.S. Cl. 354—269 4 Claims



1. A maneuvering and release device for camera, comprising on the one hand a manoeuvring rod of which one end is provided with a means for fixation to the camera and the other end is rendered fast with a handle, a connecting piece being mounted to rotate about the rod near said handle, and on the other hand, a release accompanying the rod in its movements, wherein:

the connecting piece is provided, opposite the front face contiguous with this handle, with an inner circular toothing whose notches are adapted to cooperate with at least one finger projecting from said front face in order selectively to define angular positions of said piece relatively to said handle,

and this connecting piece is also integral with a sheath for the assembly of a fixed sleeve of a push button controlling a release, this sheath extending at right angles to the rod to offer the push button in this direction.

4,339,192

CABLE RELEASE ATTACHABLE TO A CAMERA SHUTTER

Franz Starp, Mittlere Steige 36, and Dieter Rittmann, Calwerstrasse 53, both of 7547 Wildbad 5, Fed. Rep. of Germany

Filed Jul. 23, 1981, Ser. No. 286,190
Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028431; Jul. 26, 1980, 3028465; Apr. 4, 1981, 3113643
Int. Cl.[3] G03B *9/02, 17/26, 17/38*
U.S. Cl. 354—269 16 Claims

1. Cable release arrangement, which is connectable to the shutter of a camera having an objective aperture provided with shutter segments releasable to take a photograph and actuatable between a closed and an open shutter position and with diaphragm blades actuatable between a preselected size aperture position and a fully open aperture position, comprising

a housing forming a common actuating handle,

a switching device operatively arranged on the housing,

first and second flexible power transmitting members, each member having an adjacent end provided with an end piece disposed on the housing and a remote end provided with a shutter connection for operatively connecting the corresponding member to the shutter of such a camera,

the first member being adapted for effecting release of the shutter segments to take a photograph, and being provided with a first axially displaceably mounted push rod which is guided in the end piece of the first member and arranged on the housing for finger pressure direct actuation to displace the first push rod for effecting in turn such release of the shutter segments, and

the second member being adapted for correspondingly actuating the shutter segments and the diaphragm blades to view the field of the camera through the objective aperture of the shutter, and being provided with a second axially displaceably mounted push rod which is guided in the end piece of the second member and operatively connected with the switching device for indirect actuation by

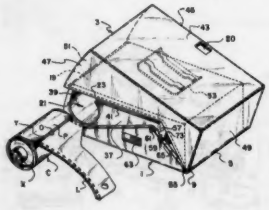
the switching device to displace progressively the second push rod for correspondingly actuating in turn the shutter segments and the diaphragm blades.

4,339,193

CAMERA DOOR AND BODY CONSTRUCTION

Donald M. Harvey, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 6, 1981, Ser. No. 260,866
Int. Cl.[3] G03B *17/02*
U.S. Cl. 354—288 9 Claims



1. In a bottom-loaded photographic camera for receiving a film container supporting a filmstrip having a leader extending from the container, apparatus for providing various degrees of access to the camera interior for film loading and other purposes, said apparatus comprising:

door means, openable to a partially opened position for substantially shielding the camera interior but allowing limited access to the camera interior at the camera bottom for loading a film container into said camera, and openable to a fully opened position for allowing greater access to the camera interior for other purposes; and

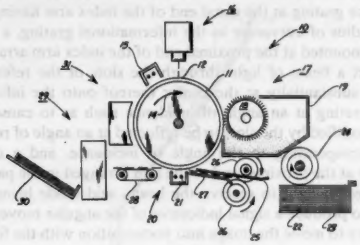
means for blocking said door means to prevent its opening farther than the partially opened position, said blocking means being adapted to be disabled to permit opening of said door means to its fully opened position.

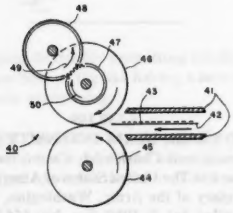
4,339,194

COLD PRESSURE FUSING APPARATUS

Albert W. Scribner, Darien, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 10, 1980, Ser. No. 168,214
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 FU 1 Claim





1. In a cold pressure fusing apparatus for use in a xerographic copying machine for fixing a developed toner image to a copy sheet, the combination comprising: a first roller rotatably mounted in said machine; driving means operatively connected to said first roller; a second roller, rotatably mounted in said machine and in pressure contact with said first roller whereby a nip is formed through which copy sheets being fused pass; and braking means operatively connected to said second roller for applying a controlled braking torque to said second roller, said torque being of such magnitude sufficient to facilitate the fusing of toner particles into said copy sheet without producing substantially any smudging of the toner particles, but of a magnitude insufficient to cause skidding of said second roller relative to said first roller.

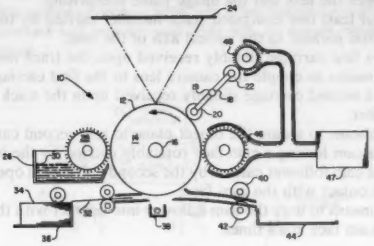
4,339,195

ELECTROPHOTOCOPIER ROLLER ASSEMBLY

George N. Gabelman, Ridgefield, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 17, 1980, Ser. No. 207,180
Int. Cl.[3] G03G *15/02, 15/16*
U.S. Cl. 355—3 CH 7 Claims

1. In an electrophotocopying machine having a photosensitive member, the improvement comprising at least two rollers operatively associated with said photosensitive member, said rollers being mounted on a turret adjacent the photosensitive member, means for rotating one of said rollers into its operating position adjacent said photosensitive member and the other of said rollers into a cleaning position removed from said



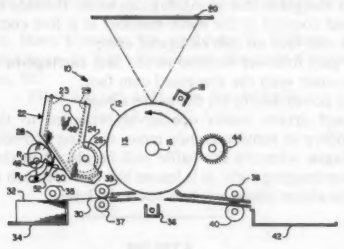
photosensitive member, and means for cleaning said other roller in its cleaning position.

4,339,196

ECCENTRIC CAM FOR ELECTROPHOTOCOPIER DEVELOPER UNIT

Christian A. Beck, Ridgefield, and Paul J. Macaluso, Norwalk, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 28, 1980, Ser. No. 210,977
Int. Cl.[3] G03G *15/00, 15/02*
U.S. Cl. 355—3 DD 6 Claims



1. In an electrophotocopying machine having a photoconductive surface and a retractable, pivotably mounted developer unit for developing an electrostatic image on the photoconductive surface, the improvement comprising at least one eccentric cam for moving said developer unit into and out of developing engagement with said photoconductive surface, said cam having a curved, cantilevered arm extending therefrom, said arm increasing the effective radius of said cam starting from the junction of the arm with the cam to the end of the arm remote from said junction, and means for reciprocally rotating said cam whereby said cam moves said developer unit into and out of developing engagement with said photoconductive surface.

4,339,197

LARGE FORMAT CAMERA LIGHT BAFFLE APPARATUS

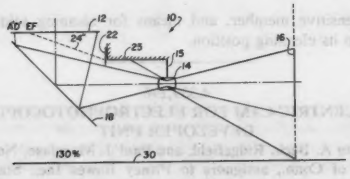
Arthur L. Kaufman, Westport, Conn.; Quentin D. Vaughan, Hollywood, Fla.; Roy G. von Dohlen, Lauderdale Lakes, Fla., and Richard Kopala, Coral Springs, Fla., assignors to Visual Graphics Corporation, Tamarac, Fla.

Filed Mar. 23, 1981, Ser. No. 246,168
Int. Cl.[3] G03B *27/36*
U.S. Cl. 355—58 8 Claims

1. Apparatus for blocking non-imaging light entering a large format camera, said camera having an elongated base, an object plane adjustably carried at one end of the base, a fixed

image plane supported by the base and spaced from the object plane, and a lens supported by the base between the object and image planes and adjustable along its optical axis and a mirror between the lens and the image plane comprising:

a. at least one elongated track member carried by the base and parallel to the optical axis of the lens;
b. a first carriage slidably received upon the track member;
c. means to couple the camera lens to the first carriage;
d. a second carriage slidably received upon the track member;
e. means to secure the object plane to said second carriage;
f. a cam having a cam face rotatably carried by the base;
g. a cam follower carried by the second carriage in operative contact with the cam face;
h. means to urge the cam follower into contact with the said cam face at all times;



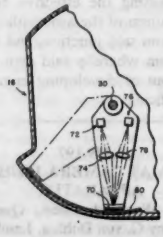
i. an opaque substantially planar baffle member within the camera positioned adjacent the lens and slidable into the path of a selected portion of the light rays traversing the lens;
j. an elongated cam swingably carried by the base at one end and coupled to the baffle member at is free end;
k. a cam face on said elongated cam;
l. a cam follower secured to the first carriage in operative contact with the elongated cam face;
m. a power source on the camera base;
n. and driven means operatively coupled to the power source to simultaneously move the first and second carriages; whereby the baffle will be placed in the path of non-imaging light as it leaves the lens for each setting of the object plane and lens upon the base.

4,339,198

GEODETIC INSTRUMENT

Fred A. Leuchter, Jr., Malden, Mass., assignor to Celenav Industries, Inc., Malden, Mass.

Continuation of Ser. No. 805,750, Jun. 13, 1977. This application Jun. 7, 1979, Ser. No. 46,264
Int. Cl.³ G01C *1/00*
U.S. Cl. 356—144 **5 Claims**



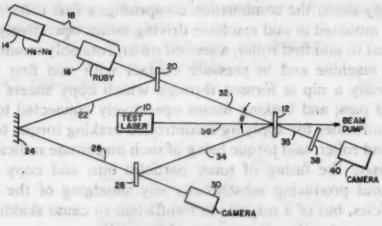
1. A geodetic instrument comprising a support, a horizontal mirror and optical system mounted to the support with line of sight of the optical system intersecting the horizontal mirror at its center, an index mirror rotatable about a predetermined axis to bring a sighted object into juxtaposition with the line of sight of the optical system at the center of the horizontal mirror, means defining an arcuate surface concentric with the axis of rotation of the index mirror, an informational grating comprising a strip of flexible sheet material bearing graduations applied thereto while flat, said strip being adhesively attached to said arcuate surface, an index arm movable in consonance with the index mirror about said axis such that the distal end of the index arm travels along said arcuate member in an arc concentric with the axis of the arcuate member, an arcuate reference grating at the distal end of the index arm having the same radius of curvature as the informational grating, a light source mounted at the proximal end of the index arm arranged to direct a beam of light through the slots of the reference grating substantially at the center thereof onto the informational grating at an angle of incidence such as to cause the beam modified by the slots to be reflected at an angle of reflection corresponding to the angle of incidence, and a diode receiver at the proximal end of the arm arranged in the path of the reflected light to receive the beam, said diode being designed to produce a signal indicative of the angular movement necessary to move the image into juxtaposition with the line of sight.

4,339,199

PULSED LASER BEAM INTENSITY MONITOR

Robert W. Jones, and Charles M. Cason, both of Huntsville, Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 7, 1980, Ser. No. 166,872
Int. Cl.³ G01J *1/00*
U.S. Cl. 356—213 **3 Claims**



1. A laser beam intensity monitor for measuring the intensity of a laser pulse at arbitrary points within said pulse, comprising: a crystal flat for receiving said laser pulse normal to the surface thereof, a first laser adapted for directing optical energy towards said flat at an angle of incidence different from the normal thereto, a second laser arranged coaxially with said first laser for providing output optical energy toward said flat, a first camera, a first beam splitter disposed for directing a portion of said first and second laser outputs along a reference path, and a second portion along a second path to said crystal flat, a second beam splitter disposed for combining optical energy from said first and second lasers reflected from said crystal flat with optical energy from said reference path and directing said combined optical energy to said first camera, a polarized and a second camera coaxially aligned with the outputs of said first and second lasers for receiving optical energy coupled through the crystal flat, said crystal flat being a doped isotropic crystalline structure exhibiting stress birefringence in response to laser pulses passing through the material, and wherein said first laser is a continuous wave laser and said second laser is a pulsed laser.

4,339,200
BORE ILLUMINATING DEVICE

Wellington S. Corbin, 439 Eastover Dr., Harrisonburg, Va. 22801

Filed Aug. 4, 1980, Ser. No. 175,242
Int. Cl.[3] G02B 27/00
U.S. Cl. 356—241 5 Claims

1. An illuminating device for permitting the illumination and inspection of a gun bore or the like having a bore diameter, said illuminating device comprising:

a light source;

a transparent light conductor rod of less diameter than said bore diameter and having first and second ends and dimensioned and shaped to permit insertion of said second end into said bore;

connector means holding said first end of said transparent light conductor rod in facing relation to said light source for receiving light from said light source to be transmitted along the length of said transparent light conductor rod to said second end thereof;

a light reflecting mirror dimensioned to be insertable into said bore and positioned in facing relation to said second end of said transparent light conductor rod to receive and deflect light therefrom; and

dispersing lens means for receiving light reflected from said light reflecting mirror and directing such light outwardly to illuminate the adjacent bore surface surrounding said dispersing lens, said dispersing lens being of greater diameter than the diameter of said light conductor rod and having a first face fixed to the second end of said light conductor rod and a second face spaced away from said second end of said light conductor rod with said mirror being positioned on said second face.

4,339,201
TEMPERATURE CONTROL SYSTEM FOR AN ELEMENT ANALYZER

Makoto Yasuda; Seiichi Murayama, both of Kokubunji, and Masaru Ito, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1980, Ser. No. 136,285
Claims priority, application Japan, Apr. 2, 1979, 54-38378
Int. Cl.[3] G01J 3/30
U.S. Cl. 356—312 8 Claims

1. A temperature control system for an element analyzer, comprising:

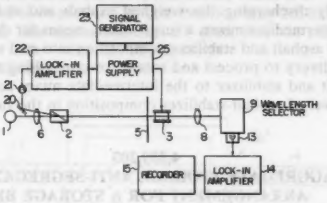
a light source for producing light along an optical axis;

an atomizer positioned along said optical axis for heating a sample placed therein into its vaporized state;

power supply means connected to said atomizer for supplying power thereto necessary to heat a sample placed therein;

a beam splitter positioned on said optical axis between said light source and said atomizer;

detector means positioned at a point on said optical axis which is on the opposite side of said atomizer from said light source to receive light which has passed through said atomizer and convert said light into an output electrical signal;



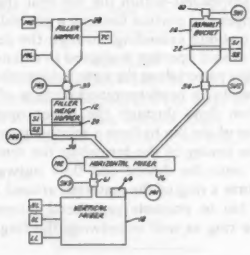
light sensor means positioned to receive radiant light which passes from said atomizer through said beam splitter for converting said radiant light into a temperature indicating signal; and

control means responsive to said temperature indicating signal for controlling said power supply means to regulate the temperature of said atomizer.

4,339,202
ASPHALT WEIGH AND MIX APPARATUS AND PROCESS

Wallace L. Hart, Evanston, Ill., and John W. Ricketts, Joplin, Mo., assignors to UIP Engineered Products Corporation, Addison, Ill.

Filed Apr. 21, 1980, Ser. No. 142,432
Int. Cl.[3] B28C 7/04
U.S. Cl. 366—8 6 Claims



1. A process for the continuous production of an asphalt-stabilizer roofing composition comprising the steps of feeding asphalt into a container, weighing the container as the asphalt is fed therein, stopping the flow of asphalt when the container is filled with a predetermined amount by weight of asphalt, simultaneously, feeding stabilizer into a second container, weighing the second container as stabilizer is being fed therein, stopping the flow of the stabilizer when the container is filled with a predetermined amount by weight of stabilizer, discharging the weighed asphalt and stabilizer into an intermediate mixer, refilling the asphalt container and stabilizer container, discharging the mixed asphalt and stabilizer composition after a predetermined period of time from the intermediate mixer into a surge mixer for delivery to process and repeating the process when the level in the surge mixer reaches a predetermined minimum and continually repeating the process until the level in the surge mixer reaches a predetermined maximum.

4. An apparatus for the continuous production of an asphalt-

stabilizer composition containing a predetermined weight ratio of asphalt to stabilizer, said apparatus comprising a weigh bucket, means for feeding asphalt into said weigh bucket, zero weigh means for stopping the flow of asphalt when the weigh bucket contains a predetermined amount by weight of asphalt, a weigh hopper, means for feeding stabilizer into said weigh hopper, zero weigh means for stopping the flow of stabilizer when the weigh hopper contains a predetermined amount by weight of stabilizer, an intermediate mixer, means for simultaneously discharging the weighed asphalt and stabilizer into said intermediate mixer, a surge mixer, means for dumping the mixed asphalt and stabilizer composition into said surge mixer for delivery to process and means for controlling the flow of asphalt and stabilizer to the intermediate mixer according to the level of asphalt-stabilizer composition in the surge mixer.

4,339,203

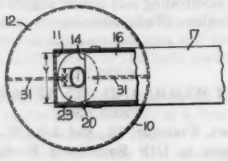
AGGREGATE STORAGE ANTI-SEGREGATION ARRANGEMENT FOR A STORAGE BIN

Donald L. Murray, Appleton, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jun. 30, 1980, Ser. No. 164,335

Int. Cl.³ B28C 5/04

U.S. Cl. 366—9 **3 Claims**



1. In a storage bin for asphaltic concrete materials having a top opening through which such materials are fed into the bin from the discharge end of a conveyor, an anti-segregation device of an essentially downwardly diverging frustoconic configuration suspended within the bin near the top opening including an upper end portion forming a generally elliptically-shaped upper opening extending through the device wherein the major axis of said opening is aligned to extend transversely of the flow of the materials as they are fed into the bin from the conveyor, whereby, a predetermined portion of the materials fed into the bin flow through the upper opening and fall toward the base of the bin to form a relatively small pile of the materials in the center of the bin while the remainder of the materials spill onto the device and flow outwardly from its periphery to form a ring of the materials around the pile in the center of the bin to promote peripheral intermixing of the materials in the ring as well as between the ring and the pile.

4,339,204

APPARATUS FOR USE IN THE PRODUCTION OF CONCRETE

Johann Placzek, 9, Feystrasse, D 894 Memmingen, Fed. Rep. of Germany

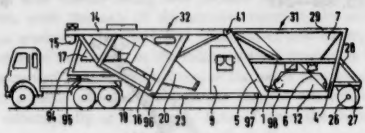
Filed Jul. 22, 1980, Ser. No. 171,128

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1979, 2930154

Int. Cl.³ B28C 7/04

U.S. Cl. 366—18 **15 Claims**

1. Apparatus, transportable as a unit, for metering and feeding aggregate materials for the production of concrete, said apparatus comprising a frame, which serves at least partly as a support arrangement for storage containers for the aggregate materials and which accommodates a metering apparatus and a feed apparatus together with a storage and mixing apparatus in both a transporting and elevated operating position, wherein the frame comprises two parts, one of which supports the metering apparatus and the other of which supports the storage and mixing apparatus in both said transporting and elevated positions, pivot means for pivotally connecting said two frame parts with one another whereby said other part can be moved about said pivot means relative to said one part, thereby enabling the apparatus to be converted from said elevated



operating position into a transporting position and a transporting position to an operating position, and a tie-bar connecting said two parts together in said transporting position to mutually brace said parts thereby, and wherein the feed apparatus comprises a charge box which is movable along an inclined path, which path is provided by said two frame parts.

4,339,205

DEFOAMING APPARATUS

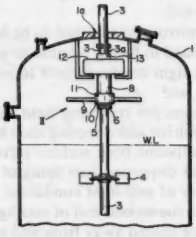
Kochi Kato, Hoya, and Namio Uemura, Oga, both of Japan, assignors to Nippon Mining Company, Limited, Tokyo, Japan

Filed Jun. 10, 1980, Ser. No. 158,084

Claims priority, application Japan, Jun. 19, 1979, 54-82911[U]

Int. Cl.³ B01F 7/18

U.S. Cl. 366—296 **3 Claims**



1. A defoaming apparatus for breaking foams floating on a liquid in a fermentation tank comprising:

a drive shaft;

rotary agitation blades rigidly coupled to said drive shaft adapted to forcibly agitate said liquid;

rotary defoaming blades adapted to break foams floating on said liquid, both said agitation and defoaming blades being housed in said tank;

a sleeve rigidly coupled to said defoaming blades rotatably mounted on said drive shaft;

transmission gear means for rotatably driving said sleeve in a direction opposite to the direction of rotation of said drive shaft at a speed higher than that of said drive shaft; said transmission gear means comprising a cup-shaped gear wheel rigidly coupled to said shaft, said cup-shaped gear wheel having an internal gear formed integrally therewith, said sleeve being integrally provided with an external gear;

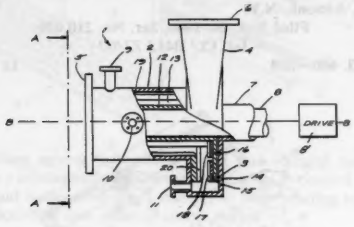
and at least one idler gear in meshing engagement with said internal gear and said external gear.

4,339,206

MIXING APPARATUS FOR MIXING A FLUID FIBER SUSPENSION WITH A TREATMENT FLUID SUSPENSION

Bjorn Ahs, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden

Filed Nov. 17, 1980, Ser. No. 207,290
Claims priority, application Sweden, Nov. 27, 1979, 7909781
Int. Cl.³ B01F 7/02
U.S. Cl. 366—307 6 Claims



1. Mixing apparatus for mixing a fluid fiber suspension with a treatment fluid, comprising:

a housing comprising a first cylindrical housing part, and a second cylindrical housing part having a larger diameter than said first cylindrical housing part, said first and second housing parts being connected together so that the cylindrical axes thereof are substantially coextensive and so that the interiors thereof are in communication;

a fluid suspension inlet means to said first housing part for introducing fluid suspension axially into said first housing part;

a fluid suspension outlet means from said second housing part for expelling treated fluid suspension tangentially from said second housing part;

treatment fluid inlet means for introducing treatment fluid to said first or second housing parts; and

means for effecting stirring of the fluid suspension and mixing of the treatment fluid therein so as to thoroughly mix the suspension and treatment fluid with minimal mechanical degradation of the suspension fibers, said means comprising: a shaft; means for mounting said shaft for rotation with respect to said housing about an axis substantially coaxial with the axes of said housing first and second parts; a first stirring member operatively mounted to said shaft and extending in said first housing part, said first stirring member having a plurality of substantially axially extending, radially upstanding ribs formed on the axial periphery thereof; a plurality of substantially axially extending, radially upstanding ribs formed on the interior of said first housing part and radially spaced from said first stirring member ribs a substantial distance; a second stirring member operatively mounted to said shaft and extending in said second housing part, said second stirring member having a plurality of substantially radially extending, axially upstanding ribs formed on a peripheral surface thereof; and a plurality of substantially radially extending, axially upstanding ribs formed on the interior of said second housing part and axially spaced a substantial distance from said second stirring member ribs,

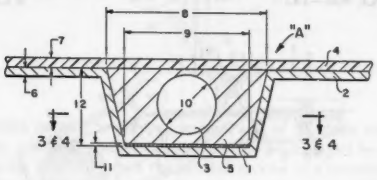
and further comprising means for effecting rotation of said shaft, and said first and second stirring members operatively attached thereto, so that fluidization of suspension introduced into said inlet takes place.

4,339,207

TEMPERATURE INDICATING COMPOSITIONS OF MATTER

Craig R. Hof, Hopatcong, and Roy A. Ulin, Wycoff, both of N.J., assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 946,935, Sep. 28, 1978, Pat. No. 4,232,552, which is a continuation-in-part of Ser. No. 895,422, Apr. 13, 1978, abandoned, which is a continuation-in-part of Ser. No. 844,334, Oct. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 796,492, May 12, 1977, abandoned. This application Jun. 27, 1980, Ser. No. 163,560
Int. Cl.³ G01K 11/08
U.S. Cl. 374—160 17 Claims



1. A temperature indicator device comprising:

(a) a flat or gradually-curved heat-conducting carrier means having one or more spaced cavities defined therein to determine a like number of predetermined temperatures in a predetermined temperature range with a like number of different thermally-responsive compositions of matter, each thermally-responsive composition of matter associated with one of the predetermined temperatures and each substantially without impurities;

(b) an indicator means located at the bottom of each of said cavities;

(c) a transparent cover sheet means in sealing engagement with the carrier means overlying each of said cavities to form an enclosure between the cavity and the transparent means; and

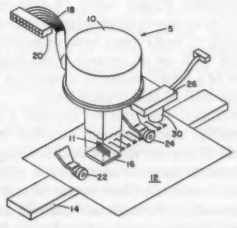
(d) each of said compositions of matter associated with a particular cavity substantially filling the cavity except for a void and completely enclosing said void within said cavity.

4,339,208

OPTICAL SENSING OF WIRE MATRIX PRINTERS

Horst H. Biedermann, Augsburg, Fed. Rep. of Germany, assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 25, 1980, Ser. No. 190,772
Int. Cl.³ B41J 3/10
U.S. Cl. 400—124 4 Claims



1. Apparatus for supervising the printing of dot matrix characters on record media in a printer having a print head including at least one dot producing element movable along a line of printing, said apparatus comprising: a

read head carried by said print head for sequentially reading the printing of each dot of said characters, said read head including light emitting means and light receiving means, and

fiber optic guide means carried by said read head and associ-

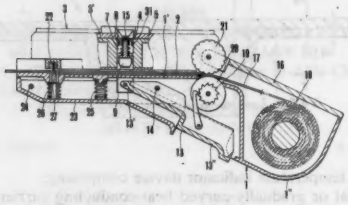
ated with each dot producing element for guiding light from said light emitting means to said record media and for guiding reflected light to said light receiving means for sensing each of the dots immediately upon being produced by said element.

4,339,209

MANUALLY OPERATED TYPING DEVICE

Satoshi Tanigami, Ichikawa, Japan, assignor to Kabushiki Kaisha Uchida Yoko, Japan

Filed Mar. 28, 1980, Ser. No. 134,960
Claims priority, application Japan, Aug. 31, 1978, 53-106908
Int. Cl.³ B41J *1/28*
U.S. Cl. 400—142 **8 Claims**



1. An improved manually operated typing device for typing on a length of tape a display combination of selected letters, numerals or symbols, of the type having elongated housing means having a rear hollow space for housing a tape magazine, a plurality of typing heads, and typing handle means for actuating a selected one of the typing heads, wherein the intended typing operation is performed by way of the operational steps of unreeling, by one pitch of typing head, the tape from the tape magazine disposed in the rear hollow space of the housing means, depressing a selected typing head by actuating the typing handle means so as to type a certain letter, numeral, symbol or the like and repeating the aforesaid operational steps, said device comprising:

a pistol-shaped housing having a hollow space at the rear part thereof for receiving the tape magazine therein, another hollow space in the middle part thereof for receiving the typing handle means therein, an extension extended from one side of said housing, a tape guiding groove on a longitudinally extending upper portion thereof through which the tape is displaced;

a rotary disc rotatably supported on said extension, said rotary disc having a series of substantially square holes along the periphery thereof;

a plurality of typing head assemblies inserted in the respective substantially square holes of said rotary disc, and movable from an upper original position to a lower typing position, each of said typing head assemblies comprising a typing head with an ink source contained therein, and a typing face of a letter, numeral, symbol or the like formed on a bottom end of said typing head;

a hammer member, operable to depress a selected typing head assembly, said hammer member being vertically displaceable along the side of said housing;

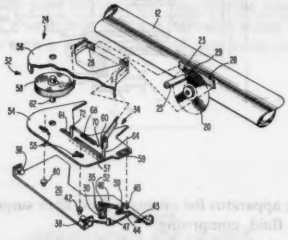
the typing handle means comprising a typing handle disposed in said middle hollow space of said housing, a pivotal pin extending through said middle hollow space secured to said housing, said typing handle being secured to said hammer member at the front end of said typing handle, said typing handle being arranged rotatably about said pivotal pin to cause vertical displacement of said hammer member, and a pivotal lever mounted to the rear part of said handle, said pivotal lever including a ratchet member, each typing head assembly including spring means biasing said typing head upwardly to said original position and into contact with said hammer member for returning said typing head after completion of the typing operation, and said typing handle being pivotable about said pivotal pin in a first direction to cause said hammer member to move said type head to said lower position against the bias of said spring means, said spring means upon release of said typing handle moving said typing handle in a second direction opposite to said first direction responsive to movement of said typing head into its upper original position by said spring means.

4,339,210

RIBBON CARTRIDGE LOADING MECHANISM

James A. Craft, and Selahattin A. Okcuoglu, both of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 26, 1980, Ser. No. 210,636
Int. Cl.³ B41J *32/00*
U.S. Cl. 400—208 **11 Claims**



1. A ribbon cartridge loading mechanism wherein said cartridge is to be inserted on a support plate and secured to said support plate into a final position, said mechanism including:

a first guide means within said support plate cooperating with a second guide means within said cartridge, for guiding said cartridge during its drop-in insertion into said support plate to a unlocked position and vertically defining the position of said cartridge while permitting lateral shifting thereof;

cam-follower means on said cartridge and cam means on said support plate for laterally shifting said cartridge on said support plate to a position at which said cartridge is in a final locked position; and,

a lever linked to said cam means manually positionable to a first position to position said cam means for said drop-in insertion and to a second position to move said cam means against said cam follower means to effect lateral shifting to said locked position.

4,339,211

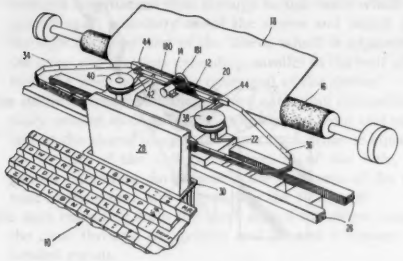
FLEXIBLE LEADER

P. Todd Alexander, King of Prussia, Pa., and Kurt H. Roth, Mississauga, Canada, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Jul. 30, 1979, Ser. No. 61,880
Int. Cl.³ B41J *35/04*
U.S. Cl. 400—248 **11 Claims**

1. A printing apparatus of the type comprising means for support of a print receiving medium, laterally movable character printing means juxtaposed to said support means for establishing a laterally movable print location, a ribbon comprising a printing medium adapted to advance past the movable print location in printing relationship with the print receiving medium and the character printing means, stationary ribbon storage means, and leader means coupled between said storage means and said print location for guiding movement of said ribbon between said storage means and said print location, the improvement residing in said leader means comprising an integral member forming a channel having a base and sidewalls extending at least partially outwardly from said base and gen-

erally away from a center of curvature about which said leader bends during movement of said printing means past said print location, said sidewalls of said member having discontinuities therein the portions of said sidewalls adjacent said discontinuities abutting against each other when said integral member assumes a substantially rectilinear shape so as to control bending of said leader means in a manner to limit bending to only one direction as said printing means moves.

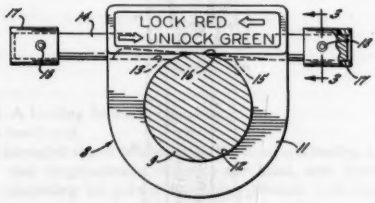


4,339,212

POSITIONING COLLAR

Charles J. Sauber, 10 N. Sauber Rd., Virgil, Ill. 60182

Filed Aug. 25, 1980, Ser. No. 181,134
Int. Cl.³ F16B *2/14, 3/00*
U.S. Cl. 403—27 **4 Claims**



1. A positioning collar clamping device comprising, a generally D-shaped body member and projecting tapered portion adapted to receive a shaft through the central longitudinal opening of said member, means defining a transverse opening through said member and overlapingly intersecting with the shaft receiving longitudinal opening of said member, said transverse opening being disposed so as to receive a shiftable lock pin adapted to affect an interference fit with said shaft disposed within said longitudinal opening, said lock pin having a tapered surface thereon so that when said pin is moved in a first direction the interference fit between the pin and shaft occurs while shifting said pin in a second direction reduces and eliminates the interference fit between said pin and said shaft, resilient means fixedly mounted on each of the ends of said lock pin and said resilient means comprises annular rubber hose members secured to said lock pin ends by transverse fastener pin means.

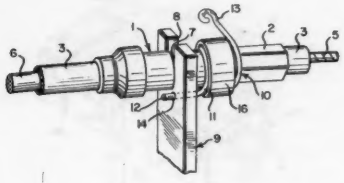
4,339,213

TERMINATION ANCHORAGE

William J. Gilmore, Manitou Beach, Mich., assignor to Acco Industries Inc., Trumbull, Conn.

Filed Jun. 4, 1980, Ser. No. 156,468
Int. Cl.³ F16G *11/10*
U.S. Cl. 403—316 **3 Claims**

1. A termination anchorage for a circular termination member where said anchorage includes a bracket having a U-shaped slot contained therein adapted to engage with an annular groove in said termination member; the improvement comprising in having a coil spring lock adapted to surround a termination member where the inner diameters of the coils of the coil spring lock are less than the outer diameter of the termination member when the coil spring lock is in an unstressed state, in having a spring tip on said coil spring lock extending parallel to the longitudinal axis of the coils, and in having a hole in said bracket adapted to be engaged by said spring tip whereby when the annular groove of a termination member is engaged by said slot, said coil spring lock will lock and engage with said termination member and said tip will engage with said hole to prevent movement of the annular groove out of said U-shaped slot.

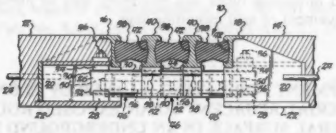


4,339,214

COMPOSITE EXPANSION JOINT

Guy S. Puccio, Snyder, and Robert J. Kogutek, Williamsville, both of N.Y., assignors to Acme Highway Products Corporation, Amherst, N.Y.

Filed May 2, 1980, Ser. No. 145,993
Int. Cl.³ E01C *11/04*
U.S. Cl. 404—69 **10 Claims**



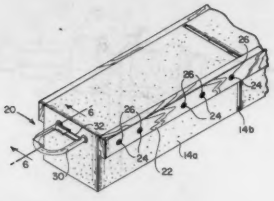
8. In a composite expansion joint assembly for a bridge roadway and the like, said joint being of the type having a pair of edge members adapted to define the opposite sides of the joint, a pair of elongated, resiliently yieldable sealing elements extending longitudinally of said groove in side-by-side relation, an elongated, rigid structural member interposed between said sealing elements and extending lengthwise of said groove, and laterally spaced support bars extending transversely of said groove, said sealing eleme..is being adapted to resiliently expand and compress upon expansion and contraction, respectively, of the joint, the improvement which comprises equalizing spring means carried by the structural members for closing and opening upon expansion and contraction of the joint, said equalizing spring means exerting centering forces upon each structural member independently of said support bars and in opposition to expansion and compression of said sealing members, said equalizing spring means comprising a common spring bracket carried by said member and having angularly related arms at opposite ends thereof, generally L-shaped brackets secured to the joint at opposite ends thereof and having arms in spaced opposition to said common bracket arms, and a pair of spring members between said opposed arms.

4,339,215

EMBEDDED MARINE PILE HOOP

Wesley W. Sluys, Bellingham, Wash., assignor to Builders Concrete, Inc., Bellingham, Wash.

Filed Jun. 9, 1980, Ser. No. 157,677
Int. Cl.[3] B63C *1/02*; E02B *3/20*
U.S. Cl. 405—219 2 Claims



1. In a marine float formed by a concrete casing surrounding a buoyant foam core and having a plurality of spaced-apart tie rods extending transversely therethrough with their respective ends projecting from opposite side walls of said float along the upper edge thereof, a pile hoop for slidably securing said float to an upstanding pile, comprising;

a hoop having an encircling portion terminating in a pair of parallel mounting legs having a rub block extending therebetween, said encircling portion having an inside transverse dimension slightly larger than the diameter of said pile to allow said encircling portion and rub block to loosely surround said pile; and

a pair of parallel mounting tubes embedded in said float with their respective ends exposed at the end wall of said float, said tubes being spaced apart by the spacing between said mounting legs and having a shape and size to conform to the shape and size of said mounting legs to allow the mounting legs of said hoop to be inserted into respective mounting tubes and secured thereto, said mounting tubes and mounting legs extending inwardly to intersect at least one of said tie rods such that said tie rod passes through said mounting tubes and mounting legs to prevent axial movement of said mounting legs.

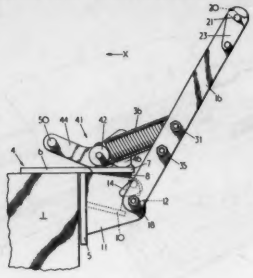
4,339,216

EQUIPMENT FOR LAYING A LAYER OF ELONGATE MATERIAL ADJACENT TO AN EXPOSED ROCK OR MINERAL SURFACE IN AN UNDERGROUND MINE

Roy L. Bell, Burton-on-Trent, England, assignor to Coal Industry (Patents) Limited, London, England

Filed Mar. 24, 1980, Ser. No. 133,044
Claims priority, application United Kingdom, May 23, 1979, 7917967
Int. Cl.[3] E21D *19/02*
U.S. Cl. 405—303 18 Claims

1. Equipment for laying a layer of elongate material adjacent to a newly exposed rock or mineral surface formed by a mining machine cutter as the machine traverses along a working face, comprising a support bracket for fixed attachment to the mining machine, the support bracket having a first pivot, support arm means for supporting a store of elongate material, the support arm means extending from the first pivot on the support bracket and being pivotally supported by the first pivot on the support bracket, resilient means for moving the support arm means about its pivotal mounting, and an over center device which has a second fixed pivot parallel to the first pivot and having a lever connected to the second pivot, the resilient means being connected to the lever and to the support arm, whereby the lever in one operational mode is adapted to cooperate with the resilient means to urge the support arm means about its pivotal mounting to urge support means for the store of elongate material towards the newly exposed rock or mineral surface and which in a further operational mode is adapted to cooperate with the resilient means to permit the support arm means to move about its pivotal mounting to allow the support



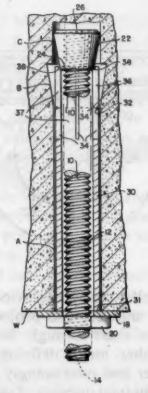
means for the store of elongate material to move to a position clear of the newly exposed rock or mineral surface.

4,339,217

EXPANDING ANCHOR BOLT ASSEMBLY

Patrick J. Lacey, Crestwood, N.Y., assignor to Drillco Devices Limited, Long Island City, N.Y.

Filed Jul. 7, 1980, Ser. No. 166,640
Int. Cl.[3] F16B *13/06*
U.S. Cl. 411—55 4 Claims



1. An expanding anchor and structural wall assembly, said assembly comprising:

(a) a structural wall having a preformed hole having a cylindrical portion extending inwardly from the mouth of the hole at a surface of the wall, and the hole having a conical flared portion beginning at a predetermined distance from said mouth and flaring at a predetermined angle to the longitudinal axis of the hole so that the conical portion enlarges toward the inner end portion of the hole; and

(b) an expanding anchor comprising, a threaded bolt extending through said cylindrical portion and into said conical portion of the hole;

a cone carried by the bolt and being of such diameter as to be snugly insertable through said cylindrical portion of the hole into the conical portion, the flare of the cone being at a greater angle with respect to said axis than the predetermined angle of the flared portion of the hole;

headed means carried by the bolt outside the hole and tightenable against the wall surface to displace the cone in said conical portion toward the mouth of the hole;

a sleeve surrounding the bolt between the cone and the headed means and being of length commensurate with the combined lengths of the cylindrical and conical portions of the hole and having an outer diameter sized to slide in the cylindrical portion of the hole, the sleeve having multiple longitudinal slots through its side walls which are spaced apart annularly about the sleeve and which pass through the inner end of the sleeve which is adjacent to the cone and the slots extending parallel to the bolt away from the cone toward the outer end of the sleeve;

the sleeve having an annular groove extending circumferentially around its outer surface and spaced from said outer end of the sleeve toward the cone by a distance equal to the length of the cylindrical portion of the hole, the groove extending partway into the thickness of the side wall of the sleeve and intersecting the slots; and

the slots extending from the inner end of the sleeve nearest the cone through the groove and beyond it toward the headed means.

4,339,218

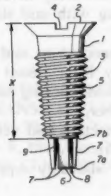
SELF-LOCKING FASTENER

Rene' A. Navarre, 408 E. Wright St., Pensacola, Fla. 32501

Filed May 5, 1980, Ser. No. 146,478

Int. Cl.³ F16B *25/00*

U.S. Cl. 411—419 **5 Claims**



1. A locking fastener; comprising:

a head; and,

a threaded shank connected to the head and having a leading end longitudinally opposite the head, said leading end including an outwardly facing conical void having an open outer end and a plurality of slots defining a plurality of fingers spaced about said void, such that material entering said void through said open outer end when said fastener is advanced forces said fingers to flair radially outwardly, wherein the fingers have a truncated trailing edge whereby reversing the fastener causes the trancated trailing edge to dig into the material and resist withdrawal of the fastener.

4,339,219

PANEL RAISING AND POSITIONING APPARATUS

Harry V. Lay, General Delivery, Kernville, Calif. 93228

Filed Jul. 31, 1980, Ser. No. 174,120

Int. Cl.³ E04G *21/14*

U.S. Cl. 414—11 **1 Claim**

1. An apparatus for raising and positioning a panel for attachment to a horizontal or vertical interior surface of a building comprising:

a movable frame including a pair of parallel horizontal foot members each of which is horizontally extensible, a pair of stanchions each of which is vertically extensible and each of which projects upwardly from one of said foot members, and a detachable center section extending between said stanchions;

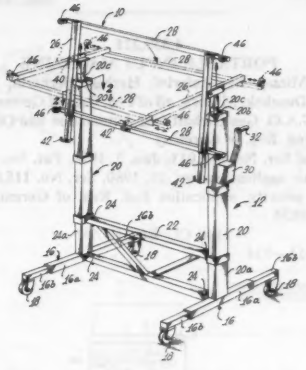
crank means for extending or contracting said stanchions;

a panel holder mounted atop said stanchions and pivotable about a horizontal axis extending perpendicular to said foot members between a generally vertical loading position and a generally horizontal working position;

locking means for securing said holder in said working position;

a plurality of rollers mounted on said holder to movably support said panel when said holder is in said working position;

support means mounted on said holder for supporting said panel along a lower edge thereof when said holder is in said



loading position, said support means being movable between a panel-engaging position and a non-panel-engaging position; and

hanger means mountable on said holder and engagable with one of said stanchions in a generally vertical position parallel to said foot members for supporting said panel in a generally vertical working position.

4,339,220

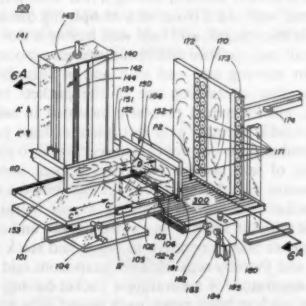
STACKING OF MATERIALS

William F. Pulda, Piscataway, N.J., assignor to Vanguard Machinery Corp., Edison, N.J.

Continuation of Ser. No. 957,758, Nov. 6, 1978, abandoned, which is a continuation-in-part of Ser. No. 867,496, Jan. 6, 1978, abandoned, which is a continuation of Ser. No. 681,683, Apr. 29, 1976, Pat. No. 4,068,765. This application Aug. 11, 1980, Ser. No. 177,003

Int. Cl.³ B65G *57/09*

U.S. Cl. 414—84 **27 Claims**



1. A stacking assemblage comprising

means for supporting materials received at a first position and arranged in a tier in accordance with a prescribed pattern, and containing a possible misalignment;

means including photoelectric sensors for automatically positioning the supporting means at a desired stacking level regardless of any misalignment in said tier;

said sensors comprising upper and lower photo cells pairs

which respond to light and cause said supporting means to move until both of the eyes of either the upper pair or lower pair receive the light; and

means responsive to the positioning means for automatically shifting the supporting means to overlie a second position and depositing said tier thereat as a constituent for a multi-tier stack.

4,339,221

PORTABLE INPUT MAGAZINE

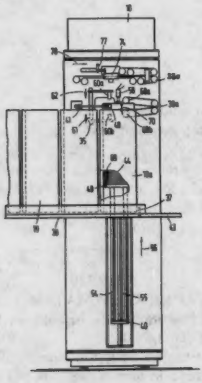
Wilhelm Mitzel, Neu-Keferlof; Herbert Bernardi, Haag, and Rudolf Duschek, Munich, all of Fed. Rep. of Germany, assignors to G.A.O. Gesellschaft fuer Automation und Organisation mbH, Fed. Rep. of Germany

Division of Ser. No. 867,011, Jan. 5, 1978, Pat. No. 4,236,639. This application Jan. 24, 1980, Ser. No. 115,032

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1977, 2729830

Int. Cl.³ B65H *1/04*

U.S. Cl. 414—114 **25 Claims**



1. An apparatus for separating a strap from a packet having a stack of thin sheets, such as bank notes, bound by the strap comprising: a housing, a magazine disposed within said housing having a receptacle and a drawer member movably received in said receptacle adapted to contain a plurality of the packets, said drawer member having a rear wall, a side wall, at least one end wall and a front with an opening dimensioned to pass at least one packet, said rear wall having a slot proximate said end wall and opposite said opening, means mounted in said housing for moving said end wall and at least part of said drawer member containing one of the packets out of said receptacle, ejector means pivotally mounted in said housing being extendable through said slot when at least part of said drawer member is moved out of said receptacle to eject at least part of one of said packets from said drawer member, first gripping means in said housing engageable with the strap of an ejected packet and second gripping means in said housing engageable with the stack of an ejected packet, and said second gripping means being operative to move said stack relative to said strap and thereby separate said strap from said stack.

15. An apparatus for separating a packet having a stack of thin sheets, such as bank notes, each bound by a strap from a magazine containing a pile of such packets comprising: a housing, a magazine disposed within said housing having a receptacle and a drawer member movably received in said receptacle adapted to contain a plurality of the packets, said drawer member having a rear wall, side walls, end walls and an open front side, means mounted in said housing for moving said pile of packets and said drawer member out of said receptacle to such extent that the open front side of the drawer member and the upper edge of the receptacle form a packet separating slot and ejector means mounted in said housing for ejecting the uppermost packet through the packet separating slot.

4,339,222

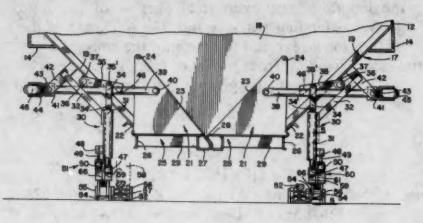
DOOR LOCKING MECHANISM FOR HOPPER CAR DOORS

Willis H. Knippel, Palos Park, Ill., assignor to Pullman Incorporated, Chicago, Ill.

Continuation of Ser. No. 36,891, May 7, 1979, abandoned. This application Oct. 31, 1980, Ser. No. 202,533

Int. Cl.³ B61D *7/30*

U.S. Cl. 414—387 **10 Claims**



1. In a railway hopper car having a hopper structure including downwardly and outwardly diverging slope sheets and outer side walls defining with said slope sheets a discharge opening,

a door hingedly connected to said hopper structure and movable outwardly from closed to open position, the improvement of a door locking mechanism comprising,

a vertical guide member,

a bracket means connecting said vertical guide member to said hopper structure,

an actuating member slideably supported on said vertical guide member,

a latch member pivotally supported on said hopper structure and connected to said actuating member,

a horizontal arm connected to said door,

second bracket means on said hopper movably supporting said arm for horizontal movement,

keeper means on said horizontal arm adapted to be engaged by said latch member for locking said doors in a closed position,

and ground mounted actuating means adapted to engage said actuating member to move the same vertically disengaging said latch member from said horizontal arm whereby said horizontal arm is adapted to move horizontally moving said door to an open position.

4,339,223

ROOF TOP CARRIER

Richard R. Golze, 637 Kingsley Trail, Bloomfield Hills, Mich. 48013

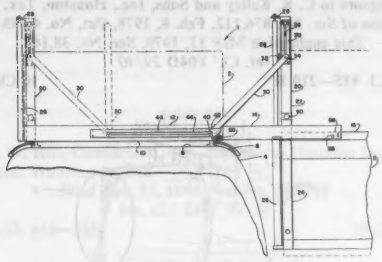
Continuation-in-part of Ser. No. 926,940, Jul. 21, 1978, Pat. No. 4,260,314. This application Jul. 17, 1980, Ser. No. 169,613

Int. Cl.³ B60R *9/04*

U.S. Cl. 414—462 **6 Claims**

1. A roof top carrier apparatus having a horizontal telescoping track with means to mount the track on a roof of a vehicle, said horizontal track having plural relatively slidable segments, travel lock means mounted on the segments for relatively locking the segments in a telescopically closed position, extension locking means connected to the segments for locking the segments in extended position, and a cargo container mounted on one of the segments for moving from a centered position on a roof of a vehicle in which the travel locking means is locked to an extended position at a side of the vehicle at which extended position extension locking means are locked, said locking means comprising a pin extending through plural openings in first and second of the segments, a spring device, connected

to the second of the segments and mounting the pin, whereby the third segment cams the spring device against spring pressure and withdraws the pin from the segment, whereby separation of the third segment from the spring device permits the spring device to move the pin into an opening in the first segment.

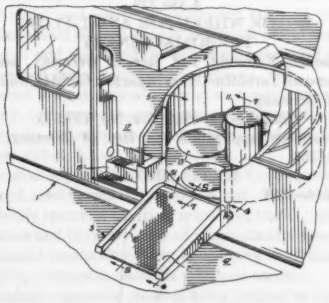


4,339,224

APPARATUS FOR ACCOMMODATING WHEELCHAIRS IN PUBLIC TRANSPORTATION VEHICLES

Charles A. Lamb, 462 W. Thurber, Tucson, Ariz. 85705

Filed Sep. 8, 1980, Ser. No. 185,308
Int. Cl.³ B60P *3/06*
U.S. Cl. 414—501 **15 Claims**



1. A system for accommodating wheelchairs and occupants confined thereto in a transit vehicle, said system comprising in combination:

a. loading means for conveying the wheelchair and its occupant between a curb area and an edge of a floor area of the transit vehicle;

b. first turntable means rotatably disposed in the transit vehicle for receiving a plurality of wheelchairs with their respective occupants therein from said loading means, said first turntable means including a plurality of wheelchair-accommodating stations sequentially disposed around said first turntable; and

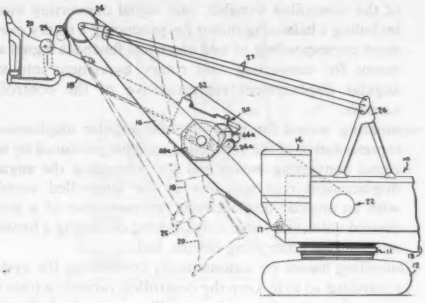
c. first motive means for rotating said first turntable to align a selected one of said stations with said loading means to allow a wheelchair supporting its occupant to roll from said first loading means onto said selected station.

4,339,225

POWER SHOVEL CROWD DRIVE ASSEMBLY

Robert B. Donnally, and Mark W. Trevithick, both of Marion, Ohio, assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 894,610, Apr. 7, 1978, abandoned. This application Jul. 27, 1980, Ser. No. 165,925
Int. Cl.³ E02F *3/75*
U.S. Cl. 414—690 **8 Claims**



1. In a power shovel including a main frame, a boom connected at the lower end thereof to the main frame, dipper handle means reciprocably and pivotally mounted on the boom, a dipper connected to an end of said dipper handle and a hoist mechanism operatively connected to said handle via the point of said boom, an improved crowd drive assembly including drive means for extending and retracting said dipper handle means, the improvement comprising:

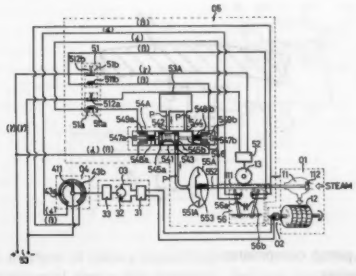
yoke means for guiding and supporting said dipper handle means in relation to said boom, said yoke means being pivotally mounted directly on said boom in such manner that loads exerted by said dipper handle, including loads creating a torsional motion or side-to-side motion of said dipper handle, on said yoke means are transmitted directly to said boom.

4,339,226

MULTIPLE-PURPOSE CLOSED LOOP AUTOMATIC CONTROL SYSTEM

Yu-Kuang Lee, No. 596, Chung Cheng Rd., Chu Pei, Hsin Chu Hsien, Taiwan

Division of Ser. No. 823,462, Aug. 10, 1977, Pat. No. 4,250,440. This application Sep. 18, 1980, Ser. No. 188,468
Int. Cl.³ F01D *17/06*
U.S. Cl. 415—15 **9 Claims**



1. A multiple-purpose, closed-loop, automatic control system comprising:

a system controlled, said system producing as an output a

controlled variable, and said system including a regulating means for selectively adjusting said controlled variable;

detecting means for detecting the controlled variable output from the system controlled and for converting the controlled variable into an electrical feedback signal representative of said controlled variable;

signal converting means for receiving the electrical feedback signal produced by said detecting means and for converting said signal into an angular displacement representative of the controlled variable, said signal converting means including a balancing motor for producing a rotary movement corresponding to said electrical feedback signal and means for converting said rotary movement into said angular displacement representative of the controlled variable;

comparing means for receiving the angular displacement representative of the controlled variable produced by said signal converting means and for comparing the angular displacement representative of the controlled variable with an angular displacement representative of a preset desired value and selectively opening or closing a forward or a reverse controlling circuit; and

controlling means for automatically controlling the system controlled so as to keep the controlled variable within the preset desired value, said controlling means including the forward and the reverse controlling circuit selectively opened or closed by said comparing means, a braking control circuit and a driving mechanism responsive to said forward and reverse controlling circuits and said braking control circuit,

wherein said driving mechanism selectively operates the regulating means of the system controlled whenever the angular displacement representative of the controlled variable is not within the angular displacement representative of the preset desired value in order to selectively adjust said controlled variable, and

further wherein said driving mechanism includes a fluid-type electromagnetic pilot valve mechanism having a piston rod, and includes a solenoid disposed at each end of said piston rod, said solenoids being selectively energized by said forward and reverse controlling circuits such that said piston rod is selectively moved in order to change the direction of flow of the fluid through the pilot valve.

4,339,227

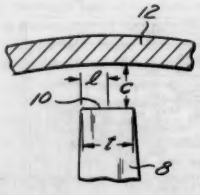
INDUCER TIP CLEARANCE AND TIP CONTOUR

Raymond B. Furst, Northridge, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 9, 1980, Ser. No. 148,106

Int. Cl.³ F04D *29/38*

U.S. Cl. 415—213 C **3 Claims**



1. A pump comprising:

a housing;

an inducer rotatable within said housing and formed with a plurality of blades each having a tip thickness less than about twice the clearance between said tip and said housing.

4,339,228

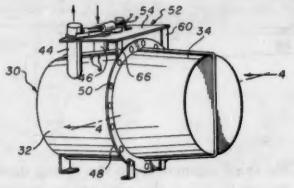
POWER UNIT FOR SINGLE LINE PNEUMATIC TUBE SYSTEM

Charles K. Kelley, and William W. Jones, both of Houston, Tex., assignors to C. K. Kelley and Sons, Inc., Houston, Tex.

Division of Ser. No. 876,112, Feb. 8, 1978, Pat. No. 4,189,261. This application May 11, 1979, Ser. No. 38,167

Int. Cl.³ F04D *29/40*

U.S. Cl. 415—219 R **10 Claims**



1. A power unit for a pneumatic tube system comprising a housing having a shape substantially resembling two truncated conical sections with a common base, a longitudinally extending axial partition plate dividing the housing into two chambers, two side-by-side ports in the housing, at least one flow-through blower mounted in the partition plate, each chamber being provided with one of the ports, one being a pressure port, the other a vacuum port, wherein the housing is formed of two vacuum formed plastic truncated conical members having conical walls with open large ends and closed small ends and annular rims about the open ends, both of said ports being provided in one of the members, an inward facing groove extending longitudinally along the conical walls and diametrally along the closed ends, the partition plate being sealingly located in the groove, and means for attaching the rims of the two members together.

4,339,229

ROTOR WHEEL FOR AXIAL-FLOW TURBOMACHINERY

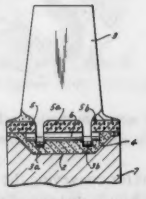
Axel Rossman, Karlsfeld, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union Munchen GmbH, Munich, Fed. Rep. of Germany

Filed Apr. 7, 1980, Ser. No. 137,873

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 2915201

Int. Cl.³ F01D *5/30*

U.S. Cl. 416—218 **6 Claims**



1. A rotor wheel for axial-flow turbomachinery comprising:

(a) a rotor disc,

(b) a plurality of radially-projecting metal blades arranged along the periphery of the rotor disc, each blade having a root,

(c) a plurality of locating rings coaxial with the rotor disc and formed predominantly of directionalized fibers, each locating ring being adjacent to all the blade roots and serving to resist centrifugal loads on the blades, and

(d) a material within which all the blade roots and locating rings are embedded, the material forming a ring coaxial

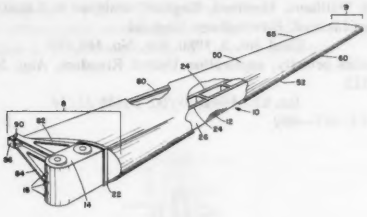
with the locating rings and serving to attach the blades to the rotor disc, and the material being between all the blade roots and the disc.

4,339,230

BIFOIL BLADE

Paul W. Hill, Cumberland, Md., assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 22, 1980, Ser. No. 142,598
Int. Cl.³ B64C *11/26*
U.S. Cl. 416—226 **10 Claims**



1. A bifoil blade having a longitudinal direction extending between its root and tip ends, a lateral direction extending between its leading and trailing edges, and an upstanding direction extending between its first and second airfoil-shaped surfaces, said blade comprising:

an upper airfoil-shaped skin having an outer surface that substantially defines said first airfoil-shaped surface;

a lower airfoil shaped skin having an outer surface that substantially defines said second airfoil-shaped surface, said upper and lower airfoil-shaped skins (i) joining together at said leading edge of said blade and at said trailing edge of said blade and (ii) defining a cavity between said upper and lower airfoil-shaped skins;

a filament wound central support structure carried in said cavity, said central support structure being affixed in said cavity to the respective inner surfaces of said upper and lower airfoil shaped skins;

said central support structure being defined by (i) laterally spaced, leading and trailing composite channels that longitudinally span said cavity in respective leading and trailing relation and (ii) a plurality of longitudinally spaced, cross-channel composite webs connecting said leading and trailing composite channels with one another;

said leading composite channel being defined by (i) upstandingly spaced, first and second leading composite bars longitudinally spanning said leading composite channel and (ii) a leading composite channel web connecting said first and second leading composite bars, said leading composite channel web being laterally thinner than those portions of said first and second leading composite bars that are respectively upstandingly adjacent said leading composite channel web;

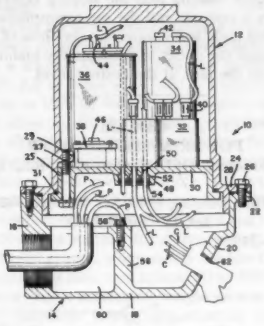
said trailing composite channel being defined by (i) upstandingly spaced, first and second trailing composite bars longitudinally spanning said trailing composite channel and (ii) a trailing composite channel web connecting said first and second trailing composite bars, said trailing composite channel web being laterally thinner than those portions of said first and second leading composite bars that are respectively upstandingly adjacent said trailing composite channel web.

4,339,231

MOTOR CONTROL HOUSING AND JUNCTION BOX FOR A SUBMERSIBLE PUMP

William J. Conery, and Terry L. Kiplinger, both of Ashland, Ohio, assignors to McNeil Corporation, Akron, Ohio

Filed Mar. 6, 1980, Ser. No. 127,793
Int. Cl.³ F04B *49/04*
U.S. Cl. 417—40 **9 Claims**



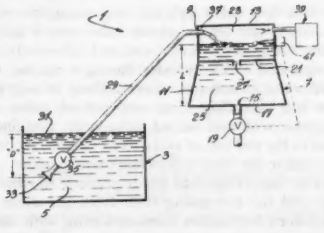
1. In combination with a pump driven by a motor which receives power from a power source and which is controlled by a plurality of motor control components, a housing for said plurality of motor control components, electrical lead lines extending from said motor control components, a junction box attached to said housing, means defining a trough in said junction box, a conduit carrying the electrical power from said power source, means in said junction box to receive said conduit, a sealing compound in said trough to seal the point of entry of said conduit into said junction box, electrical conductors extending from said pump, means in said junction box to receive said electrical conductors, a common wall between said housing and said junction box, means to seal said housing and said junction box, and means in said common wall to sealingly transfer the lead lines from the motor control components in said housing to said junction box for connection with the power source through said conduit and said electrical conductors from said pump.

4,339,232

PRESSURE DIFFERENTIAL LIQUID TRANSFER SYSTEM

George T. R. Campbell, P.O. Box N 3033, Nassau, The Bahamas

Filed Oct. 6, 1980, Ser. No. 194,437
Int. Cl.³ F04F *1/00*
U.S. Cl. 417—54 **1 Claim**



1. A method of raising liquid from a reservoir of liquid to a tank positioned above the reservoir, the tank having a liquid inlet in its top portion and a liquid outlet in its bottom portion, and a conduit sloping down and away from the liquid inlet with closure means at the free end thereof; the method comprising the steps of: with the closure means closed, placing the

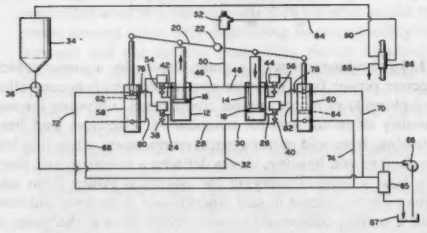
free end of the conduit within the reservoir at a desired depth and if necessary emptying the conduit above the closed valve; filling the tank with liquid to a desired level beneath the inlet; creating a desired sub-atmospheric pressure within the tank above the liquid, and within the conduit above the closure means; opening the closure means to permit liquid in the reservoir to enter the conduit and to move into the tank as a result of the head of liquid at the free end of the conduit, the momentum of the liquid rushing into the sloping conduit when the closure means is opened, and the sub-atmospheric pressure in the conduit and tank; and controlling the flow of liquid out of the tank through the outlet to substantially maintain the level of liquid within the tank at the desired level.

4,339,233

POWER-ASSISTED VALVE

Wallace F. Krueger, 4401 Merriweather Rd., Toledo, Ohio 43623

Filed Dec. 13, 1979, Ser. No. 103,382
Int. Cl.³ F04B *21/02*
U.S. Cl. 417—317 **12 Claims**



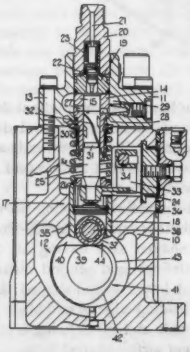
1. Apparatus for metering viscous material comprising means for establishing a source of the material, an outlet where the material is at a higher pressure than the pressure of the material at the source, a first metering cylinder having a first ram reciprocable therein, first inlet means connecting said source of material with said first cylinder, said first inlet means having first check valve means enabling flow of the material only toward said first cylinder, first outlet means connecting said first cylinder with said outlet, said first outlet means having second check valve means enabling flow of material only away from said first cylinder, first fluid-operated drive means having a first drive cylinder, a first drive piston, a first drive piston rod, and means connecting said drive piston rod and said ram to cause said ram to reciprocate when said drive piston reciprocates, said first check valve means including means forming a first valve seat, a first valve body, a first fluid-operated valve cylinder having a first valve piston, first valve piston rod means affixed to said first valve piston and extending from said first valve cylinder and engagable with said first valve body, said second check valve means including means forming a second valve seat, a second valve body, and a second fluid-operated valve cylinder having a second valve piston, second valve piston rod means affixed to said second valve piston and extending from said second valve cylinder and engageable with said second valve body, first line means connected to the rod end of said drive cylinder, second line means connected to the blind end of said drive cylinder, control valve means for supplying fluid under pressure to either of said line means and for exhausting fluid from the other of said line means, third line means communicating with said first valve cylinder and with one end of said drive cylinder to cause said first valve piston to move said first valve piston rod means into engagement with said first valve body to urge said first body against said first valve seat when said drive piston is operated in a manner to cause said first ram to move in a direction into said first metering cylinder, and fourth line means communicating with said second valve cylinder and with the other end of said drive cylinder to cause said second valve piston to move said second valve piston rod means into engagement with said second valve body to urge said second body against said second valve seat when said drive piston is operated in a manner to cause said first ram to move in a direction out of said first metering cylinder.

4,339,234

DRIVE CAM AND FOLLOWER FOR A LIQUID FUEL INJECTION PUMPING APPARATUS

Derek Williams, Hertford, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Jul. 3, 1980, Ser. No. 165,673
Claims priority, application United Kingdom, Aug. 3, 1979, 7927122
Int. Cl.³ F04B *39/00*; F16H *25/14*
U.S. Cl. 417—490 **2 Claims**



1. A liquid fuel injection pumping apparatus comprising a body part, a pump barrel located within the body part, a bore formed in the barrel, a reciprocable pump plunger located in the bore and extending from one end thereof, an outlet from the other end of the bore, a port formed in the wall of the bore and which is uncovered by the inner end of the plunger as the latter moves outwardly to allow fuel to flow into the bore, resilient means biassing the plunger outwardly, a tappet operatively connected to the plunger and supported within a bore defined in the body part, said tappet comprising a hollow body, a roller supported in the hollow body by a cross pin, and a rotary cam positioned for engagement with the roller, said cam being shaped to impart inward movement to the tappet and plunger, said cam being provided with a leading flank extending from the base circle of the cam, the tappet when moved by the leading flank imparting inward movement to the plunger, and a trailing flank which is formed in three parts, a first part extending from the level of the leading flank and during which said port is at least partly open, a second part of substantially constant radius spaced from the base circle by an amount which is sufficient to ensure that the cross pin cannot move axially within the bore in the body part, and a third part extending from said second part to the base circle.

4,339,235

METHODS AND COMPOSITIONS FOR BLEACHING OF MYCOLOGICAL STAIN

Richard C. Anderson, Burnsville, Minn., assignor to Economics Laboratory, Inc., St. Paul, Minn.

Filed Dec. 6, 1979, Ser. No. 100,736
Int. Cl.[3] D06L *3/06;* C11D *3/395, 7/54*
U.S. Cl. 8—108 A 5 Claims

1. A method of bleaching mycological stain comprising the step of:

contacting the stain with an aqueous composition comprising

(a) from about 70% to 99% by weight water;

(b) from about 0.5% to 10% by weight salt selected from the group consisting of alkali metal and alkaline earth metal hypochlorites, hypobromites, and mixtures thereof;

(c) about 0.5% to 5% by weight fumed silica;

(d) about 0% to 2.0% by weight base;

the composition contacting the stain a sufficient length of time to bleach essentially all color therefrom;

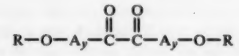
4,339,236

LOW FOAM SCOURING AGENTS

Quintin W. Decker, St. Albans; Erich Marcus, Charleston, and Harry T. Zika, S. Charleston, all of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

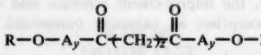
Continuation-in-part of Ser. No. 879,252, Feb. 21, 1978, abandoned. This application Aug. 21, 1980, Ser. No. 179,970
Int. Cl.[3] B08B *3/00;* C07C *69/36*
U.S. Cl. 8—137 10 Claims

1. A low temperature, low-foam, biodegradable scouring agent having the formula:



wherein R is a monovalent alkyl radical having about 11 to about 18 carbon atoms, A is a divalent radical selected from the group consisting of oxyethylene units and random mixtures of oxyethylene units with up to 1 part of oxypropylene units per unit of oxyethylene and y is an integer having values of 5 to about 11.

7. Method of cleaning cotton or polyester-cotton articles under conditions of low temperature and low foam which comprises contacting said cotton or polyester/cotton articles with an aqueous solution of a nonionic detergent having the formula:



wherein R is a monovalent radical selected from the group consisting of alkyl having 11 to about 18 carbon atoms and alkyl-substituted phenyl wherein the alkyl contains about 7 to 12 carbon atoms, A is a divalent radical selected from the group consisting of oxyethylene units and mixture of oxyethylene units containing up to 1 part of oxypropylene units per unit of oxyethylene, y is an integer having values of about 5 to about 12, and z is an integer having values of 0 to 1.

4,339,237

FREE AMINE-CONTAINING POLYMERIC DYES

Patricia C. Wang, Palo Alto, and Robert E. Wingard, Jr., Mountain View, both of Calif., assignors to Dynapol, Palo Alto, Calif.

Division of Ser. No. 832,254, Sep. 12, 1977, abandoned, which is a continuation-in-part of Ser. No. 638,730, Dec. 8, 1975, Pat. No. 4,051,138. This application Aug. 11, 1980, Ser. No. 177,027
Int. Cl.[3] C09B *69/10*
U.S. Cl. 8—405 9 Claims

1. The process for water fast coloring a proteinaceous fiber substrate which comprises applying to said substrate a solution comprising a solvent selected from the group consisting of water of pH 2.0 to 4 inclusive and a water-organic solvent containing up to 80% by weight of a member of the class of 1 to 4 carbon alkanols, ethylene glycol, propylene glycol and 3 to 5 carbon alkanones, and dissolved therein from 100 ppm to 0.5% by weight of a polymeric colorant comprising a hydrocarbon polymer backbone to which is covalently bonded through amine linkages a plurality (m) of essentially anionic group-free optically chromophoric groups and to which is also covalently bonded a plurality (n) of free primary or lower alkyl secondary amine groups, wherein n is not less than $\frac{1}{4}$ m, and n and m are such that their sum is from 20 to 3000 and the polymeric colorant has a molecular weight of not less than 2000 daltons and thereafter rinsing the substrate with water and drying the substrate.

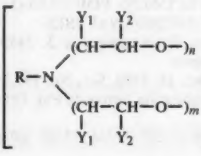
4,339,238

STABLE AQUEOUS FORMULATIONS OF STILBENE FLUORESCENT WHITENING AGENTS

Werner Fringeli, Laufen, Switzerland, and Alain Lauton, Saint-Louis, France, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 7, 1981, Ser. No. 223,173
Claims priority, application Switzerland, Jan. 14, 1980, 265/80
Int. Cl.[3] C09K *11/06;* D06P *3/852;* D21D *3/00;* D21H *3/80*
U.S. Cl. 8—527 14 Claims

1. A storable aqueous formulation which is stable to metal ions, said formulation containing a fluorescent whitening agent which is substituted by sulfo groups, and an acid phosphoric acid ester of an oxyalkylated fatty amine of the formula



or an alkali metal salt, ammonium salt or amine salt thereof, wherein R is an aliphatic hydrocarbon radical of 8 to 22 carbon atoms, Y_1 and Y_2 are both hydrogen, or one of Y_1 and Y_2 is hydrogen and the other is methyl, X is the acid radical of phosphoric acid, the acid hydrogen atoms of which radical can be replaced by alkali metal ions, ammonium ions or amine salt ions, and m and n are integers, the sum of which is 2 to 30.

4,339,239

USE OF HETEROPOLYSACCHARIDE S-119 AS AN ANTIMIGRANT

Joseph S. Racciato, San Diego, Calif., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 20, 1980, Ser. No. 161,618
Int. Cl.[3] D06P *1/48*
U.S. Cl. 8—561 6 Claims

1. In an aqueous dye-bath liquor suitable for impregnating substrates, the improvement that comprises the incorporation in said dye-bath liquor, as an antimigrant, of Heteropolysacch-

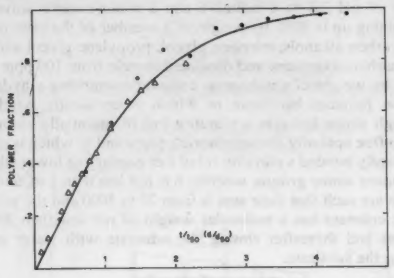
aride S-119 at a concentration ranging from about 0.001% to about 1.00% by weight based on the total weight of said dyebath liquor.

4,339,240

COLOR CHANGING POLYACETYLENIC COMPOUNDS

Gordhanbhai N. Patel, Morris Plains, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 7, 1980, Ser. No. 147,437
Int. Cl.³ G01N *21/06*
U.S. Cl. 23—230 R **24 Claims**



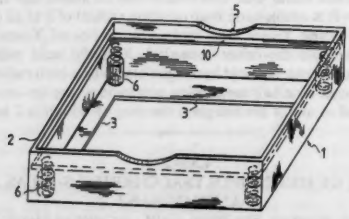
9. In a process which comprises applying to a perishable product an integral indicator of history of exposure to time-temperature or to radiation comprising at least one acetylenic compound having at least two conjugated acetylene groups per molecule, the improvement wherein the at least one acetylenic compound comprises at least one acetylenic compound having color in the visible spectrum and being active to polymerization on exposure to temperature or actinic radiation comprising an acetylenic portion having at least two conjugated acetylenic unsaturations and being capable of polymerization in the solid state, and at least one chromophore portion absorbing light in the visible spectrum.

4,339,241

APPARATUS AND METHOD FOR SIMULTANEOUSLY MIXING SPECIMENS FOR PERFORMING MICROANALYSES

Winfried A. Stöcker, Krummesserweg 3, 2419 Rondeshagen, Fed. Rep. of Germany

Filed Oct. 15, 1980, Ser. No. 197,177
Claims priority, application European Pat. Off., Oct. 16, 1979, 79103987.8
Int. Cl.³ G01N *33/50, 33/54, 33/80*; B01F *11/00*
U.S. Cl. 23—230 B **17 Claims**



1. An apparatus for performing microanalyses for immunological examinations, particularly blood group determinations, radioimmunoassays, enzyme immunoassays and immunofluorescent assays, as well as for non-immunological general chemical, biochemical and clinical-chemical examinations, said apparatus making it possible to examine a plurality of dissolved or dissolvable specimens at the same time, the apparatus comprising:

means for holding a plurality of superimposed plates including a lower plate and an upper plate;

said lower plate having a plurality of reaction fields in which the reaction mixture solvent is more strongly attracted than in the area surrounding the reaction field;

said upper plate having a solvent-repelling coating on its underside;

means for limiting the movement of the upper plate toward the lower plate;

means for limiting the movement of the upper plate away from the lower plate; and

means for periodically moving the upper plate toward and away from the lower plate.

13. A method of separately and simultaneously mixing a plurality of separate specimens for microanalysis comprising the steps of providing a pair of plates of similar size, establishing a plurality of discrete specimen attracting areas on at least one of said plates, placing a plurality of small drop-sized specimens on said discrete plate areas, placing said plates in closely spaced parallel relation to establish contact of said specimen drops with each of said plates, and periodically moving said plates toward and away from each other to effect a deformation of said drops and a mixing of the drop components, the movement of said plates being limited to prevent the detachment of said drops from either plate or the displacement of the drops from the discrete areas.

15. The method as claimed in claim **13** wherein the plurality of discrete specimen attracting areas is established by the steps of:

cleaning and degreasing the plate;

temporarily masking discrete areas of said plate;

covering the plate with a specimen solvent-repelling coating; and

unmasking said discrete areas to establish specimen solvent attractive areas on said plate.

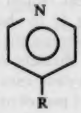
4,339,242

STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS

Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773. This application Jul. 23, 1981, Ser. No. 285,929
Int. Cl.³ G01N *33/52*
U.S. Cl. 23—230 B **5 Claims**

1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure



wherein R is lower alkyl.

4,339,243

STABILIZATION OF BENZIDINE-TYPE INDICATORS WITH VARIOUS ENHANCERS

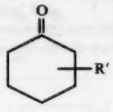
Thomas A. Magers, South Bend, and David L. Tabb, Elkhart, both of Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Division of Ser. No. 93,431, Nov. 13, 1979, Pat. No. 4,290,773. This application Jul. 23, 1981, Ser. No. 286,083

Int. Cl.³ G01N *33/52*

U.S. Cl. 23—230 B 5 Claims

1. In a composition for detecting the presence of a constituent in a test sample, said composition comprising a benzidine-type indicator, the improvement wherein said composition additionally comprises an enhancer compound having the structure



wherein R′ is H or lower alkyl.

4,339,244

PROCESS FOR THE REDUCTION OF THE PARTICLE SIZE OF COARSE GRAIN ZEOLITIC SODIUM ALUMINOSILICATES

Günther Just, Hilden, and Franz-Josef Carduck, Haan, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA), Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed May 18, 1981, Ser. No. 264,291

Claims priority, application Fed. Rep. of Germany, Jun. 6, 1980, 3021370

Int. Cl.³ B02C *19/16*

U.S. Cl. 23—293 A 7 Claims

1. A process for the reduction of the particle size of coarse grain, crystalline zeolitic sodium aluminosilicate of the NaA type obtained in an aqueous alkaline suspension by crystallization of a reaction mixture suspension formed from sodium aluminate solution and sodium silicate solution, said sodium aluminosilicate having a large cation exchange capacity consisting essentially of subjecting said aqueous alkaline suspension of the crystallized sodium aluminosilicate to treatment on a vibrating screen having a substantially uniform mesh size between 25 to 100 μm, the number of vibrations per minute and the amplitude of oscillation of said screen being so selected that at least 99.95 percent by weight, based on the anhydrous weight, of sodium aluminosilicate particles recovered have a particle size of less than 100 μm, the said aqueous alkaline suspension of the crystallized sodium aluminosilicate having a molar ratio of 2.5–5 Na_2O:1Al_2O_3:1.8 to 2SiO_2:50–100H_2O.

4,339,245

MOTOR FUEL

Lyle D. Burns, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 24, 1980, Ser. No. 200,294

Int. Cl.³ C10L *1/22*

U.S. Cl. 44—63 6 Claims

1. A gasoline composition containing an antiknock quantity of at least one antiknock compound selected from the group consisting of furfuryl acetate, ethyl furfurylacrylate, methyl furoate, and ethyl furoate.

4,339,246

MIXED FUEL COMPOSITION

Masaaki Yamamura, Wakayama; Taizo Igarashi, Amagasaki, and Toshiyuki Ukigai, Chiba, all of Japan, assignors to Kao Soap Co., Ltd.; Lion Corporation; Nippon Oil Company, Limited and Fats Co., Ltd., all of Tokyo, Japan

Filed Jun. 26, 1981, Ser. No. 278,295

Claims priority, application Japan, Jul. 10, 1980, 55-94413

Int. Cl.³ C10L *1/32*

U.S. Cl. 44—51 4 Claims

1. A mixed fuel composition which comprises (a) a fuel oil, (b) a coal powder having an [H]/[C] ratio according to the coalification band method in the range of 0.4–0.75 and an [O]/[C] ratio in the range of 0.09–0.18 and (c) a partially amidated copolymer obtained by reacting a copolymer of a polymerizable, unsaturated hydrocarbon and maleic anhydride with an aliphatic amine of 2–36 carbon atoms or a salt thereof as a stabilizer.

4,339,247

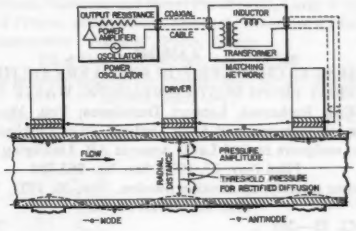
ACOUSTIC DEGASIFICATION OF PRESSURIZED LIQUIDS

Lynn Faulkner, Gahanna, and Foster B. Stulen, Columbus, both of Ohio, assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 27, 1981, Ser. No. 257,800

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—15 7 Claims



1. A method of separating a dissolved gas from a liquid, which comprises:

(a) providing a hollow chamber with at least one acoustic transducer attached thereto on the outer surface at a first antinodal point;

(b) introducing a liquid containing a dissolved gas into the hollow chamber;

(c) tuning said at least one acoustic transducer to be in resonance with the hollow chamber containing the liquid, and with a transducer power supply;

(d) focusing acoustic energy from said at least one acoustic transducer so that peak intensity occurs near the center of the hollow chamber, thereby avoiding cavitation damage on the inside surface of the hollow chamber;

(e) vibrating the hollow chamber by means of the acoustic energy thereby causing bubbles of the dissolved gas to form and grow in the liquid; and

(f) separating the bubbles from the liquid.

4,339,248

PROCESS FOR THE PURIFICATION OF GASEOUS EFFLUENT FROM INDUSTRIAL PROCESSES

James W. Garner, Farmington Hills, Mich., assignor to Grow Group, Inc., New York, N.Y.

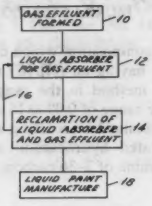
Continuation of Ser. No. 739,203, Nov. 8, 1976, abandoned. This application Nov. 19, 1979, Ser. No. 95,337

Int. Cl.³ B01D *47/00*

U.S. Cl. 55—89 16 Claims

9. In a process for the purification of gaseous effluent result-

ing from the application of liquid paint, wherein liquid paint is applied to a substrate, thereby forming a gaseous effluent containing at least a hydrocarbon solvent or an oxygenated solvent and prior to passing effluent to the atmosphere, removing the pollutants from the gaseous effluent, the improvement comprising;



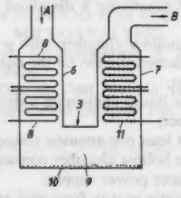
in a zone spaced from that in which the spraying of the substrate takes place, absorbing the pollutants in the gaseous effluent by passing the gaseous effluent into a non-reactive liquid solvent for said gaseous pollutants, wherein said liquid solvent is substantially water immiscible and contains only the elements carbon, hydrogen and oxygen, wherein the liquid solvent is comprised of a polyoxyalkylene glycol.

4,339,249

HEAT EXCHANGER FOR RECOVERY OF HEAT ENERGY FROM DUST-CONTAINING WASTE GASES

Karl-Erik Berkestad; Lennart Danielsson; Erik Henriksson; Torsten Svensson, and Artur Östlund, all of Linköping, Sweden, assignors to Stal-Laval Apparat AB, Linköping, Sweden

Filed Nov. 27, 1978, Ser. No. 963,734
Claims priority, application Sweden, Nov. 30, 1977, 7713541
Int. Cl.³ B01D *51/00*
U.S. Cl. 55—269 **7 Claims**



1. A heat exchanger for the recovery of heat energy in dust-containing hot waste gases, said heat exchanger comprising

means forming a hollow duct through which the hot dust-containing waste gases flow,

at least one first pipe positioned within said hollow duct, each said first pipe having a smooth outer surface and being capable of carrying a heat-absorbing fluid therethrough, each said first pipe having a serpentine configuration,

at least one second pipe positioned within said hollow duct, each said second pipe having fins on the outer surface and being capable of carrying a heat-absorbing fluid therethrough, each said second pipe having a serpentine configuration, and

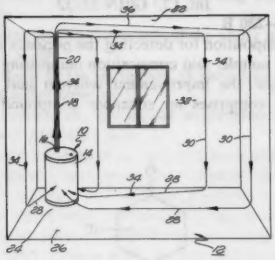
means forming a dust collection surface located between said first and second pipes.

4,339,250

FRESH AIR FOUNTAIN AIR FILTER ARRANGEMENT

Timothy T. Thut, 2940 Neilson Way, #102, Santa Monica, Calif. 90405

Filed Jul. 17, 1980, Ser. No. 169,714
Int. Cl.³ B01D *46/02, 50/00*
U.S. Cl. 55—316 **6 Claims**



1. A portable fresh air fountain air filter arrangement for cleaning the ambient air in an enclosed space comprising, in combination:

a top member having:

a first outer surface;

a first inner surface spaced transversely from said first outer surface; and

first walls between said first outer and first inner surfaces defining first apertures through said top member;

an air blower adjacent said top member and exhausting through said first apertures;

a bottom member transversely spaced from said top member;

an air filtration media extending from said top member to said bottom member and with said top and bottom members forming a cavity containing said air blower;

attaching means retaining said top member to said bottom member through said cavity without contacting said air filtration media whereby said fresh air fountain air filter arrangement is held together as a unit only by the action of said attaching means in pulling said top and bottom members toward each other thereby retaining said air filtration media in position;

said top member having a first outer lip at 90° to the plane of said first outer surface;

said first outer lip having:

a second outer surface; and

a second inner surface spaced laterally from said second outer surface;

an outer air filter media retainer;

an inner air filter media retainer spaced laterally from said outer air filter media retainer;

a top positioning member;

a bottom positioning member spaced transversely from said top positioning member;

said top and bottom positioning members having:

a third outer surface;

a third inner surface spaced transversely from said third outer surface;

a second outer lip at 90° to the plane of said third outer surface having:

a fourth outer surface; and

a fourth inner surface spaced laterally from said fourth outer surface;

an inner lip at 90° to the plane of said third outer surface having:

a fifth outer surface; and

a fifth inner surface spaced laterally from said fifth outer surface;

said bottom member having:

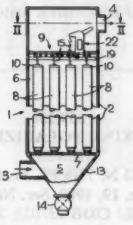
a sixth outer surface;
a sixth inner surface spaced transversely from said sixth outer surface; and
a third outer lip at 90° to the plane of said sixth outer surface;
said top member adjacent said top positioning member;
said bottom member adjacent said bottom positioning member;
said outer air filter media retainer adjacent said fourth inner surface; and
said inner air filter media retainer adjacent said fifth inner surface;

4,339,251

FILTER BAG TENSIONING ARRANGEMENT

Eldridge J. Shumate, Louisville, Ky., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Nov. 5, 1981, Ser. No. 318,635
Int. Cl.³ B01D *46/02*
U.S. Cl. 55—378 **10 Claims**



1. A filter bag tensioning arrangement for a baghouse having a gas cleaning chamber, a flow-through filter supporting platform extending across the top of the gas cleaning chamber, a plurality of filter bags arranged in rows extending widthwise of the gas cleaning chamber, each of said bags being suspended from a supporting strap connected with the upper end of the bag, and attachment means anchoring the lower end of each of the filter bags within the baghouse, comprising:
a guide track in the platform aligned above each row of filter bags;
winch means including a follower adapted to be engaged with the track above one of said rows to enable a workman to selectively align said winch means above one of the filter bags in said row while restraining its lateral movement with respect to the track, downwardly projecting coupling means releasably engageable with the platform upon selective widthwise movement of said winch means with respect to the platform, and a supporting cable adapted to be secured to the strap of said one of the bags to pull it toward the platform upon actuating said winch means to establish a predetermined tension in said bag; and
fastening means for releasably securing said strap to the platform to support and maintain the tension in said bag.

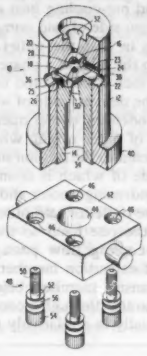
4,339,252

APPARATUS FOR PRODUCING SOLID HYDROGEN

Peter M. Bell, Potomac, Md., and Ho-Kwang Mao, Fairfax, Va., assignors to Carnegie Institution of Washington, Washington, D.C.

Filed Feb. 29, 1980, Ser. No. 126,082
Int. Cl.³ F25J *1/02*
U.S. Cl. 62—35 **1 Claim**

1. An apparatus for filling a cell means defined by an apertured gasket and two opposed diamond anvils with hydrogen comprising cold chamber means, vessel means, means for supporting said vessel in said chamber means, means for supporting said cell means in said vessel with said diamond anvils spared from said gasket, means for supplying liquid hydrogen to said vessel whereby said cell would be filled with liquid hydrogen and remotely controlled means for moving said diamond anvils into engagement with said gasket about the



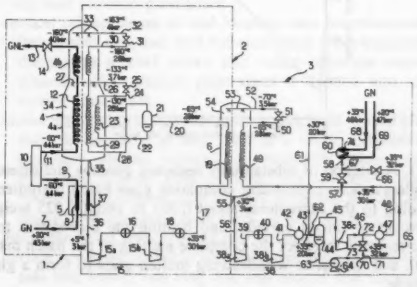
aperture therein to trap an amount of liquid hydrogen in said cell means.

4,339,253

METHOD OF AND SYSTEM FOR LIQUEFYING A GAS WITH LOW BOILING TEMPERATURE

Enzo Caetani, Nanterre, and Henri Paradowski, Cergy Pontoise, both of France, assignors to Compagnie Francaise d'Etudes et de Construction "Technip", Paris, France

Filed Dec. 9, 1980, Ser. No. 214,698
Claims priority, application France, Dec. 12, 1979, 7930489
Int. Cl.³ F25J *1/02*
U.S. Cl. 62—40 **13 Claims**



10. An apparatus for cooling and liquefying at least one relatively dry gas having a low boiling point, including at least the following circuits: on the one hand, an in particular open circuit of gas to be liquefied; on the other hand, a closed circuit of main refrigerating fluid in heat exchanging relationship with said gas circuit by means of cryogenic heat exchangers for liquefying, sub-cooling and pre-cooling purposes respectively, and being part of one cold-generating incorporated cascade of at least two refrigerating main and auxiliary fluids, respectively; and at last a closed circuit of auxiliary refrigerating fluid in heat exchanging relationship with said circuit of main refrigerating fluid by means of at least one cryogenic heat exchanger for pre-cooling and at least partially liquefying said main refrigerating fluid and comprising at least the following elements: at least one gaseous fluid compressor, a condensing cooler operating with a coolant in particular of outer origin, a total liquefaction and sub-cooling flow passage-way extending through said pre-cooling heat exchanger and extending generally in the same direction as the flow passage-way for the main

refrigerating fluid therein, a first expansion member at the downstream end of said total liquefaction and sub-cooling flow passage-way and connected to a vaporization passage-way extending through said pre-cooling heat exchanger to lead to the low pressure suction side of said compressor, wherein the improvement consists in that the outlet of said condensing cooler is connected to the inlet of a phase separator the vapor collecting space of which is connected to the suction side of another compressor the delivery side of which is connected to the inlet of another condensing cooler operating with a cooling medium in particular of outer origin, whereas the liquid collecting space is connected to the suction side of an accelerating pump the delivery side of which is connected in part to the inlet of said other condensing cooler and in part to a second expansion member; the outlet of said other condensing cooler being connected on the one hand to the inlet of said total liquefaction and sub-cooling flow passage-way and on the other hand to a third expansion member; the outlets of said second and third expansion members being connected to the inlet of said phase separator through a cooler for said gas to be liquefied which is initially in a relatively moist state.

4,339,254

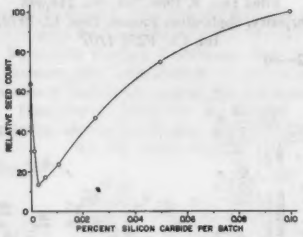
GLASS MANUFACTURE EMPLOYING A SILICON CARBIDE REFINING AGENT

Marvin C. Gridley, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Continuation-in-part of Ser. No. 193,045, Jun. 6, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,559

Int. Cl.³ C03C *3/04*; C03B *1/00*

U.S. Cl. 65—27 **14 Claims**



1. A method of substantially reducing gaseous inclusions in a glass article, comprising combining glass batch ingredients, adding to the ingredients about 0.001 to about 0.025 weight percent of silicon carbide, and heating the ingredients to a molten state to effect the complete melting of the batch material, and thereafter withdrawing molten glass to form a glass article.

4,339,255

METHOD AND APPARATUS FOR MAKING A MODIFIED AMORPHOUS GLASS MATERIAL

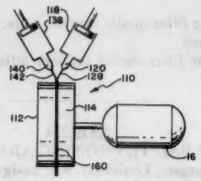
Stanford R. Ovshinsky, Bloomfield Hills, and Richard A. Flasck, Rochester, both of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Sep. 9, 1980, Ser. No. 185,528

Int. Cl.³ C03B *7/00, 19/00*; C03C *3/30*

U.S. Cl. 65—32 **75 Claims**

1. A method for making an amorphous modified glass material, comprising the steps of: providing a cooling substrate; forming a host matrix material on said substrate; directing at least one fluid material including at least one modifier material in a stream toward said substrate in a direction such that said stream of said at least one modifier material converges with said host matrix material; independently controlling the flow and quench rates of said stream; providing for relative movement between said substrate and said stream of modifier material; and maintaining said substrate at a cooling temperature which, in conjunction with said relative movement, flow and quench rate of said modifier material cools the combined host matrix and modifier materials as they make contact with one another at a quenching rate of from $10^{4°}$ to at least $10^{8°}$ C. per second or more thereby to form a ribbon of modified amorphous glass material in which the optical and electrical transport properties and the number and type of electronic configurations can be controlled, thereby controlling the orbital relationships between said host matrix material and said modifier material.



4,339,256

METHOD OF MAKING POLARIZED OPHTHALMIC GLASS

Robert A. Simms, 6132 N. 77th Pl., Scottsdale, Ariz. 85253

Filed Dec. 19, 1980, Ser. No. 218,048

Int. Cl.³ C03B *23/025, 23/037*

U.S. Cl. 65—32 **17 Claims**

1. A method of making polarized ophthalmic glass, comprising the steps of:

heating a sheet of ophthalmic glass, including a reducible metal oxide as a part of its composition, to its softening point in a reducing atmosphere for a predetermined period of time sufficient to reduce said metal oxide to metal particles to a predetermined depth less than the thickness of said sheet on at least one surface of said sheet;

stretching said sheet in one direction to elongate said metal particles in parallel lines; and

cooling the glass to set the elongated metal particles in the glass.

4,339,257

METHOD OF PRODUCING CURVED AND PARTLY COLORED GLASS SHEET

Kazuo Ueda, Matsusaka, Japan, assignor to Central Glass Company, Limited, Uve, Japan

Filed Mar. 16, 1981, Ser. No. 243,809

Claims priority, application Japan, Mar. 17, 1980, 55-33628

Int. Cl.³ C03C *17/04*

U.S. Cl. 65—60.5 **12 Claims**

1. A method of producing a partly colored and at least partly curved glass sheet, the method including the steps of covering a selected region of a surface of a flat glass sheet with a layer of a coloring agent which comprises an inorganic pigment and a glass frit which is lower in melting temperature than the glass sheet, heating the glass sheet so as to soften the glass sheet and fuse the glass frit contained in said layer, and press-shaping the heated glass sheet into a desirably curved shaped so as to allow the fused glass frit containing therein said pigment to adhere to the glass sheet surface,

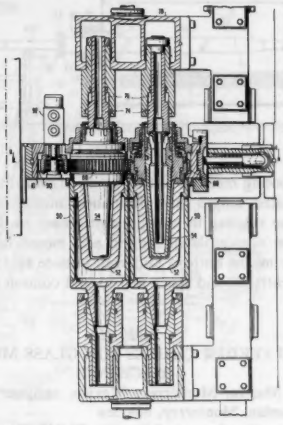
characterized in that said coloring agent further comprises an alumina powder which adheres to the surfaces of the particles of said glass frit until fusion of said glass frit on the sheet glass surface.

4,339,258

METHOD FOR BLOW MOLDING AND COOLING HOLLOW GLASSWARE

John K. Martin, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico

Division of Ser. No. 898,080, Apr. 20, 1978, Pat. No. 4,200,449.
This application Dec. 28, 1979, Ser. No. 107,850
Int. Cl.³ C03B 9/193
U.S. Cl. 65—79 1 Claim



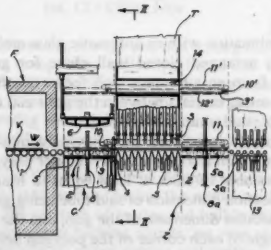
1. A method of blow molding hollow glassware comprising:
pressing a preform in a parison mold with a controlled pressure plunger and thereafter supporting said preform by a rotatable neck ring within a closed blow mold;
positioning a nozzle in aligned but non-sealed spaced relation to said neck ring; and
forming said preform into ware having the shape of said blow mold by forcing air through said nozzle into the interior of the ware while permitting air to exit from the ware through the space between said nozzle and said neck ring to simultaneously shape and internally cool the ware.

4,339,259

PROCESS AND APPARATUS FOR BENDING AND TEMPERING GLASS SHEETS, ESPECIALLY THIN SHEETS

Ciro Paudice; Vitantonio Sassanelli; Dino Di Nocco; Francesco Pracilio, and Nicolo' Casa, all of Vasto, Italy, assignors to Societa' Italiana Vetro-Siv-S.p.A., San Salvo, Italy

Filed Dec. 1, 1980, Ser. No. 211,721
Claims priority, application Italy, Dec. 7, 1979, 27967 A/79
Int. Cl.³ C03B 23/023, 27/00
U.S. Cl. 65—104 10 Claims



1. A process for bending and tempering glass sheets, particularly thin glass sheets, in a glass treatment system of the type including a furnace for heating a glass sheet to the softening point thereof, a forming zone for bending the softened glass sheet into a desired shape, a tempering zone for tempering the shaped glass sheet, and a discharge zone for discharging the shaped and tempered glass sheet, said process comprising;
conveying said glass sheet through said furnace and from said furnace to said forming zone by means of roller conveyors;
at said forming zone, supporting said softened glass sheet on a ring carried by a frame, raising said frame, said ring and said softened glass sheet to a level above said roller conveyors, and bending said softened glass sheet to form said shaped glass sheet;
moving said frame, said ring and said shaped glass sheet horizontally at said level from said forming zone through said tempering zone, and therein tempering said shaped glass sheet to form said shaped and tempered glass sheet, to said discharge zone, said operation of moving being conducted in a single longitudinal direction without vertical or transverse displacement of said frame, said ring and said glass sheet;
at said discharge zone, lowering said frame, said ring and said shaped and tempered glass sheet from said level, and transferring said shaped and tempered glass sheet to discharge roller conveyors; and
operating said discharge roller conveyors and thereby discharging said shaped and tempered glass sheet.

6. In an apparatus for bending and tempering glass sheets, particularly thin glass sheets, said apparatus being of the type including a furnace for heating a glass sheet to the softening point thereof, a forming zone for bending the softened glass sheet into a desired shape, a tempering zone for tempering the shaped glass sheet, and a discharge zone for discharging the shaped and tempered glass sheet, the improvement comprising:
roller conveyor means for conveying said glass sheet through said furnace to said forming zone;
a ring, carried by a frame, at said forming zone for supporting said softened glass sheet;
vertical raising means at said forming zone for raising said frame, said ring and said softened glass sheet supported thereby to a level above said roller conveyor means, whereat said softened glass sheet is formed into said shaped glass sheet;
means for moving said frame, said ring and said shaped glass sheet horizontally at said level in a single longitudinal direction without vertical or transverse displacement from said foming zone through said tempering zone, wherein said shaped glass sheet is tempered to form said shaped and tempered glass sheet, to said discharge zone;
discharge roller conveyors at said discharge zone; and
vertical lowering means at said discharge zone for lowering said said frame, said ring and said shaped and tempered glass sheet from said level and for transferring said shaped and tempered glass sheet to said discharge roller conveyors.

4,339,260

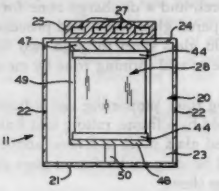
ENVIRONMENTALLY PROTECTED ELECTRONIC CONTROL FOR A GLASSWARE FORMING MACHINE

William E. Johnson, and William H. Ryan, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 12, 1981, Ser. No. 224,350
Int. Cl.³ C03B 9/40
U.S. Cl. 65—160 18 Claims

1. In a glassware forming machine having an electronic control system including an electronic component and means for mounting the electronic component, a cooling system comprising:
heat sink means in heat transfer relationship between the electronic component and the mounting means;
a cooling manifold means; and
thermoconductive means in heat transfer relationship between

said heat sink means and said manifold means whereby heat generated in the electronic component is transferred to said



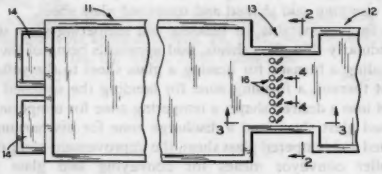
manifold means by said heat sink means and said thermoconductive means to cool the electronic component.

4,339,261

DRIVE SYSTEM FOR GLASS FURNACE STIRRERS

Ronald O. Walton, and Orville L. Tary, both of Toledo, Ohio, assignors to Libbey-Owens-Ford Company, Toledo, Ohio

Filed Sep. 8, 1980, Ser. No. 185,207
Int. Cl.³ C03B 5/187
U.S. Cl. 65—178 **9 Claims**



1. In a continuous tank-type glass melting furnace having a plurality of stirrers arranged in at least one row extending transversely across a section of said furnace for homogenizing molten glass as it flows through said furnace, each said stirrer including a stirring member for immersion in the molten glass, a rotary shaft extending upwardly from the stirring member through a cover over the molten glass, means mounting said shaft for rotation about its longitudinal axis, and drive means connected to said shaft for rotating said stirring member, the improvement wherein said drive means includes an individual power unit connected to said shaft of each said stirrer for driving each stirrer independently of the others, said individual power unit comprising a synchronous electric motor and control means for each said stirrer whereby rotation of individual stirrers relative to one another in said at least one row of stirrers may be synchronized.

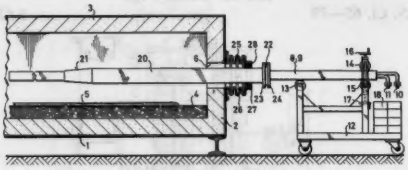
4,339,262

COOLING APPARATUS FOR FLOAT-GLASS INSTALLATION

Eberhard Liepelt, Stolberg-Breinig, Fed. Rep. of Germany, assignor to Saint-Gobain Vitrage, Aubervilliers, France

Filed Mar. 4, 1981, Ser. No. 240,408
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1980, 3008960
Int. Cl.³ C03B 18/22
U.S. Cl. 65—182.1 **12 Claims**

1. A cooling apparatus for use with an installation in the formation of a continuous ribbon of glass that floats on a molten bath in a substantially enclosed space between an inlet for molten glass and an outlet through which said ribbon is removed, said cooling apparatus comprising at least one conduit means adapted to extend through one wall of said installation into said space, above at least a portion of the width of said ribbon and in an orientation substantially perpendicular to the path of movement of said ribbon toward said outlet, said conduit means providing a path of circulation for a cooling medium for cooling said ribbon as it moves, and insulation means on said conduit means likewise adapted to extend through said one wall and along said conduit means to a location spaced from its distal end, said insulation means being disposed as a sleeve around said conduit means thereby to thermally insulate said conduit means and substantially localize the cooling effect



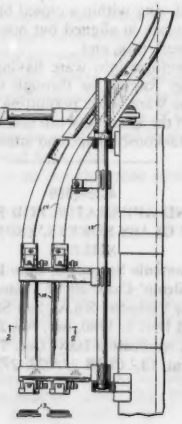
of said cooling medium to the region of said ribbon below the non-insulated length, said insulation means being movable lengthwise relative to said conduit means to increase or decrease the non-insulated length, and means for sealing said insulation means both to said wall outside said installation to seal the entry to said space and to said conduit means.

4,339,263

GOB FEEDER CHUTES FOR GLASS MOLDING MACHINES

John K. Martin, Monterrey, Mexico, assignor to Vitro Tec Fideicomiso, Monterrey, Mexico

Continuation-in-part of Ser. No. 96,045, Nov. 20, 1979, abandoned. This application Mar. 20, 1981, Ser. No. 246,023
Int. Cl.³ C03B 7/16
U.S. Cl. 65—225 **5 Claims**



1. In combination with an automatic glass molding machine, a vertically arranged closed wall chute for guiding molten glass gobs from an automatic gob feeder to the glass molds while preventing contact between the gobs and the inner walls of the chute, said chute comprising:

an elongated closed wall tube having a non-circular cross section which is a substantially regular polygon having an even number of sides at least equal to four, the smallest cross section dimension of said tube being greater than the cross section dimension of the gob, and the included interior angle of each corner of the polygon being sufficiently small to define substantial air passageways between the gob and the corners of the chutes, the movement of air through said passageways incident to falling of the gob

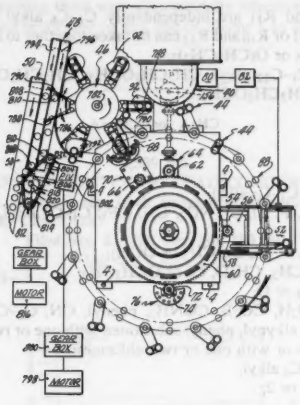
through the chute being effective to center the gob and space it equidistantly from the chute walls.

4,339,264

GLASSWARE FORMING APPARATUS

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Hartford, Conn.

Filed Aug. 18, 1980, Ser. No. 179,381
Int. Cl.³ C03B 9/44
U.S. Cl. 65—239 **9 Claims**



1. Glassware forming apparatus of the type which includes a plurality of individual forming units rotatable about a central axis, each unit including a plurality of neck ring assemblies stationary in a vertical direction and having their vertical axis in a plane containing the central axis, a plurality of split blow molds equal in number to the number of neck ring assemblies, said blow molds being stationary in a vertical direction and having a parting line when closed which is in a plane containing the central axis, and a plurality a blank molds equal in number to the number of neck ring assemblies and movable between said first position wherein the blank molds are positioned in cooperation with the neck ring assemblies and a second position wherein said blank molds are positioned downwardly and outwardly from said neck ring assemblies, the radius from the central axis through the vertical axis of one blank mold being angularly offset with the radius from the central axis through the vertical axis of the other blank mold when the blank molds are in the second position.

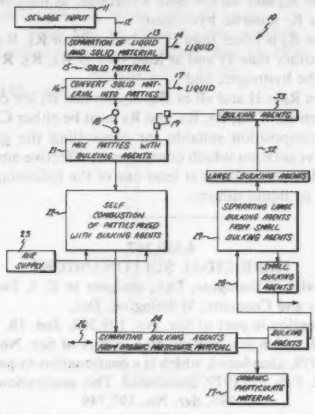
4,339,265

SEWAGE TREATMENT METHOD AND APPARATUS

John A. Engelmann, Wayzata, Minn., assignor to Veda, Inc., Long Lake, Minn.

Filed Feb. 27, 1980, Ser. No. 125,115
Int. Cl.³ C05F 3/04
U.S. Cl. 71—9 **27 Claims**

1. A method of treating sewage and converting the same into organic fertilizer comprising: collecting liquid and solid sewage material in liquid and solid material holding means having a lower section, separating part of the liquid from the solid material by allowing the solid material to settle in the lower section of the holding means, removing the liquid from the holding means, converting the solid material into patties, removing liquid from the solid material during the conversion of the solid material into patties, mixing the patties with bulking agents, locating the mixture of patties and bulking agents in a pile of mixed patties and bulking agents, moving air into the lower part of the pile of mixed patties and bulking agents to enhance self-combustion of the patties wherein the patties are oxidized to organic particulate material, mixing the bulking agents and oxidized organic particulate material, separating the mixed bulking agents and organic particulate material by reciprocating movement thereof in an elongated longitudinal path provided with a shaker means having an elongated longitudinal perforated means for carrying the bulking agents and allowing the particulate material to flow through the perforated means into an elongated trough having an open end, and separately collecting the bulking agents moving from the perforated means and particulate material moving from the open end of the trough.



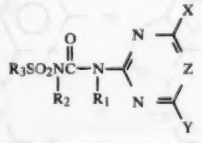
4,339,266

HERBICIDAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 840,167, Oct. 6, 1977, Pat. No. 4,257,802.
This application May 19, 1980, Ser. No. 151,245
Int. Cl.³ A01N 43/46; C07D 239/42
U.S. Cl. 71—92 **18 Claims**

1. A compound of the formula:

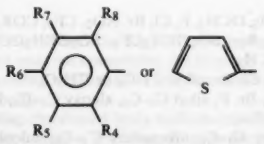

(I)

wherein

R_1 is H, alkyl of one to three carbon atoms or —OCH_3;

R_2 is H or alkyl of one to three carbon atoms;

R_3 is



R_4 and R_7 are independently hydrogen, fluorine, chlorine, bromine, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, nitro, CF_3, CH_3S— or Ch_3CH_2S—;

R_5, R_6 and R_8 are independently hydrogen, fluorine, chlorine, bromine or methyl;

X is Cl, CH_3, $—CH_2CH_3$, alkoxy of one to three carbons, CF_3, $CH_3S—$, $CH_3OCH_2—$ or $CH_3OCH_2CH_2O—$;
Y is CH_3 or OCH_3;
Z is CH;
and their agriculturally suitable salts; provided that:
(a) R_1 and R_2 may not simultaneously be hydrogen; and
(b) when R_4 and R_8 are both hydrogen, at least one of R_5, R_6, or R_7 must be hydrogen;
(c) when R_6 is other than H, at least one of R_4, R_5, R_7, and R_8 is other than H and at least two of R_4, R_5, R_7, and R_8 must be hydrogen; and
(d) when R_6 is H and all or R_4, R_5, R_7 and R_8 are other than H, then all of R_4, R_5, R_7, and R_8 must be either Cl or CH_3.

11. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim **1** and at least one of the following: surfactant, solid or liquid diluent.

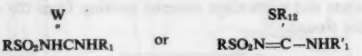
4,339,267
HERBICIDAL SULFONAMIDES

George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

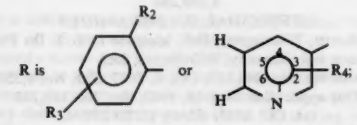
Continuation-in-part of Ser. No. 109,262, Jan. 18, 1980, abandoned, which is a continuation-in-part of Ser. No. 68,658, Aug. 28, 1979, abandoned, which is a continuation-in-part of Ser. No. 14,201, Feb. 22, 1979, abandoned. This application Oct. 16, 1980, Ser. No. 197,749

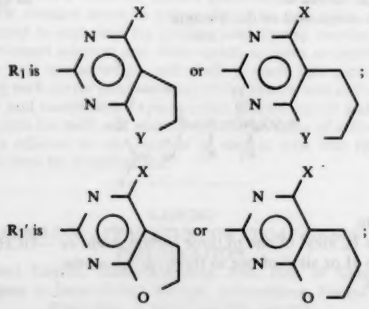
Int. Cl.[3] **A01N** *47/36;* **C07D** *239/70, 491/48, 491/52*
U.S. Cl. 71—92 **28 Claims**

1. A compound selected from

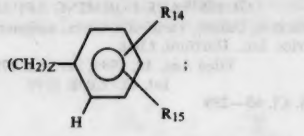


wherein

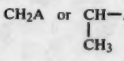




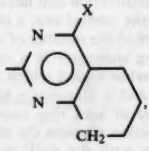
R_2 is H, CH_3, OCH_3, F, Cl, Br, NO_2, CF_3, COR_5, $S(O)_mR_{10}$, $SO_2NR_{10}R_{11}$, $SO_2OCH_2CF_3$, $SO_2OCH_2CCl_3$ or $SO_2N(OCH_3)CH_3$;
R_3 is H, F, Cl, Br, alkyl C_1–C_4 or CH_3O;
R_4 is H, Cl, Br, F, alkyl C_1–C_4, alkoxy C_1–C_4, NO_2, CO_2R_6 or $R_{13}—S—$;
R_5 is alkoxy C_1–C_6; alkenyloxy C_3–C_6; haloalkoxy C_2–C_6 substituted with 1 to 3 halogens selected from Cl, F and Br; cycloalkoxy C_5–C_6; $O—(CH_2CH_2O)_nR_7$; $OCH_2CH_2CH_2OR_7$; NR_8R_9; $N(OCH_3)CH_3$ or C_1–C_4 alkylthio;
R_6 is alkyl C_1–C_6;
R_7 is alkyl C_1–C_2;
R_8 and R_9 are independently H or alkyl C_1–C_4 or R_8 and R_9 may be taken together to be $(CH_2)_4$, $(CH_2)_5$ or $O(CH_2CH_2—)_2$; and
R_8 can also be



R_{10} and R_{11} are independently C_1–C_6 alkyl or C_3–C_4 alkenyl or R_{10} and R_{11} can be taken together to be $(CH_2)_4$, $(CH_2)_5$ or $O(CH_2CH_2)_2$;
R_{12} is C_1–C_{12} alkyl; $CH_2CH_2OCH_3$; $CH_2CH_2OCH_2CH_3$; $CH_2CH_2CH_2OCH_3$;



R_{13} is C_1–C_3 alkyl;
R_{14} is H, F, Cl, Br, NO_2, CN, CF_3, C_1–C_3 alkyl, OCH_3 or CH_3S;
R_{15} is H, F, Cl, Br, CH_3 or OCH_3;
X is H, CH_3, CH_3O, Cl or OCH_2CH_3;
Y is CH_2 or O;
A is CO_2H, CO_2B, $CONH_2$, phenyl, CN, C_2–C_4 alkenyl, C_2–C_4 alkynyl, phenyl substituted with one or two methyl groups or with one or two chlorines;
B is C_1–C_4 alkyl;
m is 0, 1 or 2;
n is 1 or 2
Z is 0 or 1;
W is oxygen or sulfur; provided that
(i) when R_1 is



then
R_2 is NO_2, COR_5, $SO_2NR_{10}R_{11}$, $SO_2N(CH_3)(OCH_3)$ or SO_2R_{10};
R_4 is other than H; and
X is CH_3 or OCH_3;
(ii) when W is sulfur; when Y is oxygen and their agriculturally suitable salts.

25. A composition for the control of undesirable vegetation consisting essentially of an herbicidally effective amount of a compound of any of claims **1–24** and at least one of (a) a surface active agent, and (b) a solid or liquid diluent.

26. A method for the control of undesirable vegetation comprising applying to the locus of such undesirable vegetation an herbicidally effective amount of a compound of any of claims **1–24**.

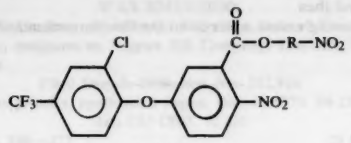
4,339,268
HERBICIDAL NITROALKYL 5-[2-CHLORO-4-(TRIFLUOROMETHYL)PHENOXY]-2-NITROBENZOATES

Robert J. Theissen, Bridgewater, N.J., assignor to Rhone-Poulenc Agrochimie, Lyons, France

Continuation-in-part of Ser. No. 117,732, Feb. 1, 1980, abandoned. This application Jun. 8, 1981, Ser. No. 271,143 Claims priority, application Argentina, Jan. 30, 1981, 284163

Int. Cl.[3] **A01N** *37/36;* **C07C** *79/46*
U.S. Cl. 71—108 **8 Claims**

1. A herbicidal compound of the formula



where R is an alkylene group having 1–4 carbon atoms.

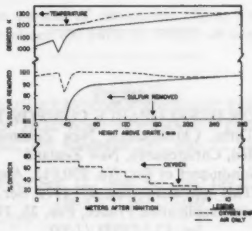
6. A method for combating unwanted plants which comprises contacting them with a herbicidally effective amount of a compound according to any one of claims 1 to 5.

4,339,269

PROCESS FOR SINTERING LEAD CONCENTRATES

George W. Healy, Sandy, Utah, assignor to University of Utah, Salt Lake City, Utah

Filed Sep. 2, 1980, Ser. No. 183,660
Int. Cl.[3] C22B 1/20
U.S. Cl. 75—5 13 Claims



1. A process for improving the efficiency of a lead concentrate sintering machine comprising:

laying an initial ignition layer on a moving grate in said sintering machine;

igniting said ignition layer;

laying a mix bed on top of the ignition layer;

enriching combustion air by adding oxygen during the initial stages after the mix bed is laid;

terminating the enriching step at a predetermined distance downstream from ignition; and

introducing fog into the combustion air after the enriching step has terminated, the fog maintaining the temperature of the bed below about 1300° K.

9. An improved process for producing lead sinter from a mixture of predetermined proportions of lead concentrate and recycled slag and sinter using a conventional lead concentrate sintering machine comprising:

increasing the proportion of lead concentrate in the mixture fed to the sintering machine;

enriching combustion air by adding oxygen during the initial stages after sinter contact;

decreasing the amount of oxygen enrichment to the combustion air as the mixture passes through the bed;

terminating oxygen enrichment of the combustion air at a first predetermined distance downstream of initial sinter contact; and

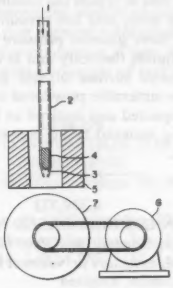
adding water to the combustion air at a second predetermined distance downstream of the initial sinter contact, the water being added in the form of finely divided liquid water.

4,339,270

CORROSION RESISTANT AMORPHOUS NOBLE METAL-BASE ALLOYS

Koji Hashimoto, 25-5, Syogen 2-chome, Izumi-shi, Miyagi-ken; Tsuyoshi Masumoto, Sendai; Motoi Hara, Sendai; Katsuhiko Asami, Sendai, and Kazutaka Sakiyama, Hohfu, all of Japan, assignors to Toyo Soda Manufacturing Co. Ltd., Shin-nanyo and Koji Hashimoto, Iaumi, both of, Japan

Filed Apr. 14, 1980, Ser. No. 139,650
Claims priority, application Japan, May 16, 1979, 54-59171
Int. Cl.[3] C22C 30/00
U.S. Cl. 148—403 8 Claims



1. An amorphous alloy which is prepared by rapid quenching at a cooling rate of higher than 10,000° C./sec. from the liquid state and consists of

(1) 10 to 40 atomic percent of P and/or Si

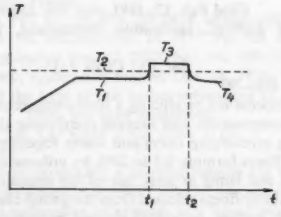
(2) 90 to 60 atomic percent of two or more of Pd, Rh and Pt.

4,339,271

METHOD OF MANUFACTURING A SINTERED POWDER BODY

Sven-Erik Isaksson, and Hans Larker, both of Robertsfors, Sweden, assignors to Asea AB, Västerås, Sweden

Continuation of Ser. No. 378,998, Jul. 13, 1973, abandoned, which is a continuation-in-part of Ser. No. 373,132, Jun. 25, 1973, which is a continuation of Ser. No. 230,877, Mar. 1, 1972. This application Jun. 28, 1978, Ser. No. 919,916
Int. Cl.[3] B22F 3/00
U.S. Cl. 75—223 11 Claims



1. A method of manufacturing a sintered body from sinterable powdered material comprising the steps of:

(a) cold-pressing the sinterable powdered material to form a shaped body;

(b) providing the shaped body with an initially porous surface layer having a thickness of up to about 1 mm., said surface layer being comprised of a coating material having a melting point that is lower than the melting point of the sinterable material of the body, said layer being capable of fusing and thereby becoming non-porous and gas-tight upon being heated to a temperature above the melting point of the coating material;

(c) subjecting the shaped body with the porous surface layer thereon simultaneously to vacuum and heating at an elevated first temperature below the melting point of said coating material whereby the evacuation of said shaped body takes place over its whole surface, said evacuation being continued for a time sufficient to degasify the entire shaped body;

(d) thereafter heating the body with the surface layer thereon to a second temperature which is above the melting point of said coating material whereby said layer fuses and is rendered non-porous and gas-tight;

(e) isostatically hot pressing the shaped body with the gas-tight surface layer thereon at a sintering temperature not higher than that at which the coating material is in a fluid high viscous state, said hot pressing being accomplished utilizing an inert gaseous pressure medium which completely surrounds the body and is in direct contact with the entire outer surface of said gas-tight surface layer whereby the sinterable powdered material of the shaped body is compacted and sintered to high density;

(f) said coating material being non-volatile at said second temperature.

4,339,272

TUNGSTEN CARBIDE-BASED HARD METALS

Rajeev K. Grover, London, and Eric Gillam, North Harrow, both of England, assignors to National Research Development Corporation, London, England

Filed Jun. 25, 1980, Ser. No. 162,949

Claims priority, application United Kingdom, Jun. 29, 1979, 7922642

Int. Cl.³ C22C *29/00*

U.S. Cl. 75—240 **6 Claims**

1. A tungsten carbide-base hard metal, comprising 75–97 weight % tungsten carbide, of which 20% may be replaced by (an) other transition metal carbide(s), the balance being binder, characterized in that the composition of the binder itself is 8–24 weight % manganese, carbon in an amount of 2.5–3.5%, optionally up to 5% of an austenite stabiliser, and the remainder iron.

4,339,273

PROCESS FOR PRODUCING A FIBER-REINFORCED, HYDRAULICALLY SETTING COMPOSITION, THE COMPOSITION PRODUCED AND THE USE THEREOF

Peter E. Meier, Wädenswil; Otto W. Gordon, Oberurnen, and Gero Büttiker, Hirzel, all of Switzerland, assignors to Ametex AG, Niederurnen, Switzerland

Filed Feb. 17, 1981, Ser. No. 234,912

Claims priority, application Switzerland, Feb. 22, 1980, 1440/80

Int. Cl.³ C04B *7/35*

U.S. Cl. 106—90 **10 Claims**

1. A process for producing a fiber-reinforced, hydraulically setting composition, said process comprising the steps of:

mixing reinforcing fibers and water together, said reinforcing fibers forming 0.5 to 20% by volume of said composition and being at least one of the organic and inorganic synthetic fibers selected from the group consisting of steel, glass, carbon, polyvinyl alcohol, polypropylene, viscose, acrylic, phenol formaldehyde, polyester, aromatic and aliphatic fibers;

combining the mixture of fiber and water with a hydraulic binder;

adding an aqueous solution of at least one of a water soluble and a water-emulsifiable polymer selected from the group consisting of polyacrylates, polyacrylamides and polyvinyl alcohol;

adding a metallic compound selected from the group consisting of divalent and polyvalent metal sulphates and metal hydroxides, said polymer and said metallic compound combining to function as a flocculating system in said composition, said metallic compound comprising in the range of 0.01 to 10% by weight of said composition; and then

removing excess water from the thus formed mixture.

4,339,274

BINDING MATERIALS BASED UPON MAGNESIUM COMPOUNDS

Hubert Duyster, Ronnenberg; Günter Voigt, and Gerhard Budan, both of Kassel, all of Fed. Rep. of Germany, assignors to Kali und Salz Aktiengesellschaft, Kassel, Fed. Rep. of Germany

Filed Jun. 3, 1980, Ser. No. 156,214

Claims priority, application Fed. Rep. of Germany, May 25, 1979, 2921245

Int. Cl.³ C04B *9/02*

U.S. Cl. 106—106 **4 Claims**

1. A method of manufacturing a magnesium oxide mortar dry product on the basis of magnesium hydroxide and magnesium chloride, comprising intimately mixing magnesium hydroxide and magnesium chloride in dry powder form; and storing the mix until time for use, the weight ratio of the magnesium oxide contained in the magnesium hydroxide to magnesium chloride lying between about 0.8 and 2.0.

4,339,275

COLOR DEVELOPABLE COMPOSITION

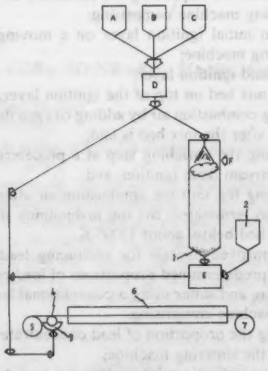
Geoffrey C. Tutty, Christchurch, New Zealand, assignor to INCA Limited, Christchurch, New Zealand

Continuation-in-part of Ser. No. 930,013, Aug. 1, 1978, abandoned. This application Sep. 27, 1979, Ser. No. 79,258

Claims priority, application France, Feb. 23, 1979, 79 04644

Int. Cl.³ C09D *11/00*

U.S. Cl. 524—255 **14 Claims**



1. A color developer composition comprising a free base of a cationic solvent dye in OH^- form, said dye being capable of developing a color or a more intense color upon reaction with an organic acid developing agent; a binder selected from the group consisting of waxes and resins which (1) are non-polar and non-acid, (2) do not develop said free base and (3) are soluble in Class 1 (ASTM) solvents; and a substantially non-polar solvent for both said binder and said free base, which solvent (1) does not develop said free base, (2) is weakly hydrogen bonded and (3) is classified as a class 1 (ASTM) solvent.

4,339,276

WAX EMULSION

Nobuo Yokoyama, and Nobuaki Kawabata, both of Yokohama, Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Dec. 3, 1980, Ser. No. 212,916
Claims priority, application Japan, Dec. 8, 1979, 54-159516
Int. Cl.³ C08L 91/06
U.S. Cl. 106—271 24 Claims

1. A wax emulsion consisting essentially of:

(A) a petroleum fraction wax with a melting point from 40° to 90° C.;

(B) an oxygen containing wax prepared by mixing

10 to 80 parts by weight of a petroleum fraction wax (I) with a melting point from 50° to 85° C. with

90 to 20 parts by weight of a polyolefin wax (II) selected from the group consisting of polyethylene, polypropylene, copolymers of ethylene and propylene and mixtures thereof with a melting point from 36° to 120° C., a number average molecular weight of 310 to 1,000, and 5 to 50 double bonds per approximately 1,000 carbon atoms, and

reacting about 100 parts by weight of said mixture (B) (I) and (II) with 3 to 25 parts by weight of a compound selected from the group consisting of unsaturated polycarboxylic acids, unsaturated polycarboxylic acid anhydrides and mixtures thereof in the presence of 0.2 to 5 parts by weight of an organic peroxide; and

(C) water,

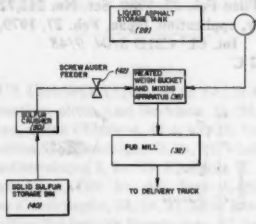
wherein the amount of component (B) is 3 to 20 parts by weight to about 100 parts by weight of component (A).

4,339,277

SOLID SULFUR-EXTENDED ASPHALT COMPOSITION AND METHOD AND APPARATUS THEREFOR

Hans E. Schult, 109 Shoshone Dr., Apt. C, East Peoria, Ill. 61611

Filed Sep. 22, 1980, Ser. No. 189,373
Int. Cl.³ C08L 95/00
U.S. Cl. 106—275 7 Claims



1. A method of making bituminous concrete having a sulfur-extended asphalt binder comprising the steps of:

heating liquid asphalt cement to a temperature of at least 300° F. but less than 305° F.;

adding solid sulfur in substantially crushed form to the heated asphalt cement on substantially a 1:1 weight basis;

pre-blending the solid sulfur and asphalt cement together while transferring from the asphalt cement to the sulfur a major portion of the heat required to melt the sulfur until the sulfur has been melted and dispersed throughout the asphalt cement, and adding heat during the pre-blending step or as required to maintain the temperature above the melting point of sulfur;

heating aggregate in a drying apparatus to a maximum temperature of 305° F; and

introducing the liquid blend of sulfur and asphalt cement into the heated aggregate to form bituminous concrete, the amount of asphalt being less than 3.1% by weight of the bituminous concrete.

4,339,278

COLORING COMPOSITION FOR COLORING THERMOPLASTIC POLYMERS

Jan U. Stoffelsma, Hardenberg, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Filed Jun. 16, 1980, Ser. No. 159,748
Int. Cl.³ C04B 31/40; C09C 3/08
U.S. Cl. 106—308 Q 6 Claims

1. Colouring composition for colouring thermoplastic polymers to be extruded or to be injection moulded the composition comprising a colouring pigment and a solid organic ester of an aromatic discarboxylic acid with an alcohol having 12 to 22 carbon atoms, said ester having a melting point above 25° C. but below 200° C. wherein the molten organic ester has been mixed with said colouring pigment substantially in the absence of water the composition containing at least 40% by weight of pigment and at most 60% by weight of said ester.

4,339,279

RETENTION COMPOSITION FOR DENTAL PROSTHESIS

Sven-Gunnar Hesselgren, Kummelvägen 19, S-161 39 Bromma, Sweden

Filed Jun. 11, 1979, Ser. No. 47,050
Claims priority, application Sweden, Jun. 16, 1978, 7806939
Int. Cl.³ A61K 5/00; C08L 1/26, 3/02, 5/00
U.S. Cl. 106—35 4 Claims

1. A retention composition for dental prosthesis for application between the surfaces of the dental prosthesis and oral mucous membrane of the mouth of a subject such that said retention composition retains said dental prosthesis in position in the mouth, said retention composition consisting essentially of (1) an effective amount of an orally acceptable retention agent to provide sufficient adhesive characteristics to said composition to maintain said dental prosthesis in position in the mouth, said retention agent being selected from the group consisting of an alkali metal salt of carboxy methyl cellulose, acacia, dextrine, starch, and mixtures thereof, and (2) an effective amount of sodium bicarbonate to inhibit the growth of bacteria and fungi.

4,339,280

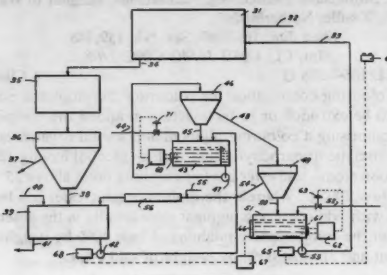
PROCESS OF PRODUCING A SEEDING MAGMA FOR SEEDING A SOLUTION OF A CRYSTALLIZABLE PRODUCT

Andre Mercier, La Madeleine, France, assignor to Fives-Cail Babcock, Paris, France

Division of Ser. No. 15,173, Feb. 26, 1979, abandoned, which is a division of Ser. No. 860,043, Dec. 13, 1977, Pat. No. 4,164,429. This application Sep. 22, 1980, Ser. No. 189,338
Claims priority, application France, Dec. 14, 1976, 76 37581
The portion of the term of this patent subsequent to Aug. 14, 1996, has been disclaimed.
Int. Cl.³ C13F 1/02, 1/06, 1/12
U.S. Cl. 127—56 1 Claim

1. A process of producing a seeding magma for seeding a solution of a crystallizable product, which comprises the steps of delivering a suspension of crystals in a liquid phase into a continuously rotating conical basket of a centrifugal drier, the basket having an upper output end and a screen being mounted in the basket, rotation of the basket causing the suspension of crystals to be subjected to centrifugal forces whereby crystals of a size inferior to the mesh size of the screen are centrifugally forced to pass with the liquid phase through the screen and crystals of a size exceeding the mesh size of the screen are retained on the screen and centrifugally displaced towards the upper output end and ejected therefrom, and forcefully projecting the crystals ejected from the output end in a trajectory against an impact surface disposed around the output end of the rotating basket, the peripheral speed of the basket and the length of the trajectory being so selected that the projected

crystals are crushed on impact with the surface, recycling the crushed crystals into the suspension delivered into the rotating



conical basket, and removing the liquid phase with the crystals passed through the screen for preparing the seeding magma.

4,339,281

SHANK DIAMOND CLEANING

Shiu-Shin Chio, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 20, 1981, Ser. No. 294,736
Int. Cl.³ B08B *3/08, 3/12*
U.S. Cl. 134—1 **13 Claims**

1. A method for cleaning the surface of a diamond which is bonded to a shank comprising the steps of:

(a) subjecting the shanked diamond to an ultrasonically agitated aqueous bath,

(b) contacting the shanked diamond with a concentrated aqueous alkaline solution,

(c) contacting the shanked diamond with an aqueous hydrogen peroxide solution,

(d) contacting the shanked diamond with dilute aqueous citric acid solution,

(e) contacting the shanked diamond with an aqueous hydrofluoric acid-nitric acid solution, and

(f) rinsing the shanked diamond with water.

4,339,282

METHOD AND COMPOSITION FOR REMOVING ALUMINIDE COATINGS FROM NICKEL SUPERALLOYS

Henry Lada, Lake Park, and Robert E. Fishter, Boca Raton, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 3, 1981, Ser. No. 270,179
Int. Cl.³ C23G *1/04, 1/10*
U.S. Cl. 134—3 **5 Claims**

1. The process of removing an aluminide coating from a nickel superalloy article characterized by contacting the coating with a stripping solution having a composition consisting essentially by volume percent of 43–48 concentrated nitric acid, 7–12 concentrated hydrochloric acid, 40–50 water, at least 0.016 mole/liter $CuSO_4$ and 0.008–0.025 mole/liter ferric chloride.

4,339,283

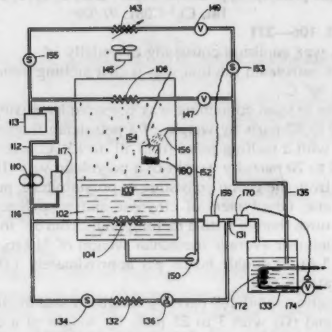
VAPOR GENERATING AND RECOVERING APPARATUS

James W. McCord, 9101 Nottingham Pkwy., Louisville, Ky. 40222

Filed Feb. 19, 1980, Ser. No. 122,007
Int. Cl.³ B08B *7/04*
U.S. Cl. 134—12 **5 Claims**

1. In a vapor generating and recovering apparatus for vaporizing a liquid and condensing vapor, including a housing having at least one cleaning compartment therein, said compartment having a liquid and a vapor therein, the improvement comprising:

first heating means in heat transfer relation with said liquid in a liquid zone in said compartment; first cooling means in heat absorbing relation with the vapor in a vapor zone in



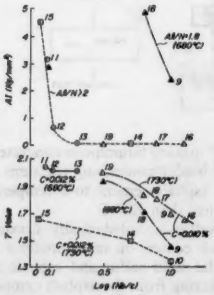
the compartment; means to transfer liquid from said liquid zone to said vapor zone; and, means to spray liquid from the means to transfer liquid at a temperature at least equal to the boiling point of the liquid whereby upon spraying of an object to be cleaned the vapor zone is prevented from collapsing.

4,339,284

METHOD OF PRODUCING NON-AGEING COLD ROLLED STEEL SHEETS

Osamu Hashimoto, Chiba; Susumu Sato, Ichihara, and Tomoo Tanaka, Chiba, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

PCT No. PCT/JP80/00032, § 371 Date Oct. 27, 1980, § 102(e) Date Oct. 27, 1980, PCT Pub. No. WO80/01811, PCT Pub. Date Sep. 4, 1980
PCT Filed Feb. 27, 1980, Ser. No. 212,724
Claims priority, application Japan, Feb. 27, 1979, 54-22830
Int. Cl.³ C21D *8/04, 9/48*
U.S. Cl. 148—12 C **6 Claims**



1. A method of producing non-ageing cold rolled steel sheets having a remarkably excellent deep drawing property or $\bar{r}$ value of not lower than 1.86, an elongation that is not lower than 50%, and an ageing index that is not more than 1.0 KG/mm^2, the method comprising preparing a steel consisting of, in % by weight, not more than 0.01% of carbon, not more than 0.2% of silicon, 0.05–0.40% of manganese, not more than 0.02% of phosphorus, not more than 0.02% of sulfur, not more than 0.01% of nitrogen, acid-soluble aluminum in an amount

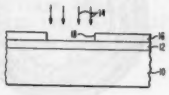
not less than 0.005%, and of at least 1.8 times amount of nitrogen, niobium in an amount less than the necessary amount for completely fixing carbon and not less than 0.001%, and in an amount of log (Nb/C) of within the range of 0.10–1.00, and the remainder being iron and incidental impurities, and subjecting the steel to a hot rolling, a cold rolling and box annealing.

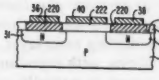
4,339,285

METHOD FOR FABRICATING ADJACENT CONDUCTING AND INSULATING REGIONS IN A FILM BY LASER IRRADIATION

Jacques I. Pankove, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 28, 1980, Ser. No. 172,757
Int. Cl.³ H01L *21/263, 21/26*
U.S. Cl. 148—1.5 **11 Claims**





1. A method for fabricating adjacent electrically conducting and insulating regions in a silicon film, comprising:

forming a layer of oxygenated, doped, non-single crystalline silicon film, said film being substantially insulating; and

selectively laser irradiating said film so as to form an irradiated portion which is substantially conducting.

4,339,286

CORE FLUX COMPOSITION FOR FLUX-CORED WIRES

Boris S. Kasatkin, ulitsa Anri Barbjusa, 22/24, kv. 111; Igor K. Pokhodnya, ulitsa Chkalova, 41-a, kv. 25; Valentin F. Musiachenko, ulitsa Saxaganskogo, 63, kv. 11; Vladimir N. Golovko, ulitsa Vladimirskaya, 9, kv. 29; Ljudmila N. Kolomiets, ulitsa Borschagovskaya, 189, kv. 45; Jury A. Simonenko, ulitsa Demiyana Korotchenko, 35, kv. 33, all of Kiev, and Anatoly V. Gulyar, ulitsa Bakinskikh Komissarov, 17, kv. 10, Sverdlovsk, all of U.S.S.R.

Filed May 27, 1980, Ser. No. 153,321
Int. Cl.³ B23K *35/34*
U.S. Cl. 148—24 **3 Claims**

1. Core flux composition of a flux-cored wire for welding and surfacing high-strength steels with a gas-shielded process, containing the core flux ingredients in the following amounts, by weight %:

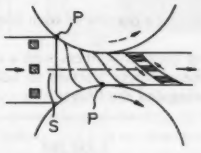
rutile concentrate	14.0–23.0
fluorite concentrate	7.0–12.0
sodium fluosilicate	2.0–6.0
ferromanganese	6.0–10.0
ferrosilicon	1.5–4.0
ferromolybdenum	1.0–2.5
chromium (elemental)	1.0–2.5
nickel (elemental)	4.0–9.0
iron powder	31.0–63.5

4,339,287

PROCESS FOR PRODUCING GRAIN-ORIENTED SILICON STEEL STRIP

Fumio Matsumoto, Kitakyushu; Satohiro Hayami, Yokohama; Tsutomu Haratani, Kitakyushu; Kunihide Takashima, and Toshio Kikuma, both of Fukuoka, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed May 15, 1980, Ser. No. 149,957
Claims priority, application Japan, May 16, 1979, 54/60057
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—111 **6 Claims**



1. A process for producing a grain-oriented silicon steel strip having [110] <001> orientation, consisting essentially of the steps of:

continuously casting a silicon steel slab;

heating said continuously cast silicon steel slab at a temperature of 1300° C. or higher, which slab contains from 2.0 to 4.0% by weight of silicon and not more than 0.085% by weight of carbon as basic components;

hot rolling said heated continuously cast silicon steel slab at a finishing temperature of from 950° to 1200° C., thereby obtaining a hot rolled strip;

subjecting the hot rolled strip to at least one cold rolling step;

subjecting the thus cold rolled strip to a decarburization annealing step; and,

subjecting the thus annealed sheet to a final high temperature annealing, wherein, during said hot rolling, the steel slab is subjected to at least one hot rolling pass at a temperature range of from 950° C. to 1250° C., said hot rolling being carried out with upper and lower rolls having circumferential speeds different from each other and which pass is sufficient to generate a plastic flow which is asymmetric in the upper and lower regions of the steel slab, as seen in the cross section of the steel slab in the rolling direction, and due to said assymmetric plastic flow, the grain-oriented silicon steel strip being free from streaks.

4,339,288

GAS GENERATING COMPOSITION

Albert T. Camp, Welcome, Md., assignor to Peter Stang, Port Tobacco, Md.

Continuation of Ser. No. 906,596, May 16, 1978, abandoned. This application Mar. 31, 1980, Ser. No. 135,634
Int. Cl.³ C06B *45/34*
U.S. Cl. 149—8 **15 Claims**

1. A gas generating composition for use in inflating automobile crash bags comprising a mixture, in pellet form, of an alkali metal azide and an oxidant, each pellet coated with a lacquer comprising stabilized cellulose nitrate and at least one nitrate ester plasticizer.

4,339,289

CONCRETE OVERLAY CONSTRUCTION

David R. Lankard, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Aug. 25, 1980, Ser. No. 180,688
Int. Cl.³ B32B *7/04, 31/00*
U.S. Cl. 156—91 **10 Claims**

1. A method for overlaying a highly reinforced concrete layer on a supporting substratum comprising

A. coating the supporting substratum with an adherent bonding agent,

B. placing a bed of fibers having an average fiber spacing of less than about 0.3 inch on the bonding agent coating and

causing at least a portion of such fibers to adhere thereto, and

C. infiltrating the bed of fibers with a concrete mixture and causing the concrete mixture to adhere to the bonding agent coating and the fibers.

4,339,290

PROCESS FOR MANUFACTURING A BRANCH ELEMENT

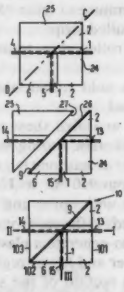
Gerhard Winzer; Achim Reichelt, and Herbert Michel, all of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 8, 1980, Ser. No. 148,169

Claims priority, application Fed. Rep. of Germany, May 23, 1979, 2920957

Int. Cl.³ B65H *69/02*

U.S. Cl. 156—159 **8 Claims**



1. A process for producing a branch element having at least three separate groups of channels containing waveguides with the channels of each group being parallel to each other and two groups of channels being arranged to extend in the common plane separated by a common reflective layer with the channels of each of the two groups being axially aligned and at least one additional group extending from one of the two aligned groups at the common reflective layer, said process comprising the steps of providing a body having a flat surface, forming a plurality of parallel guide channels in the flat surface, dividing the body along a plane extending at right angles to the guide channels to form a first part and a second part, inserting a waveguide into each of the channels of each of said parts, securing the waveguides in the first part with an optical adhesive and a cover member, polishing an end surface of the first part to be optically flat and form a joining surface, positioning the first part with the joining surface on the flat surface of the second part with the axes of the waveguides of each part being in the same planes and extending at right angles to each other, securing the two parts together in the selected position to form an assembly, splitting the assembly along a plane bisecting the angle formed by the planes of the waveguides of the two parts to form a pair of halves with split surfaces extending at forty-five degrees to the plane of each group of waveguides, polishing each of the split surfaces of the halves to be optically flat, applying a partially reflective layer on one of the two polished surfaces, assembling the two halves with the axes of the corresponding light waveguides being in axial alignment, and securing the assembled halves together to form the element.

4,339,291

MANUFACTURE OF BITUMEN PIPES

Stig O. M. Ekström, Kungsgatan 28, S-211 49 Malmö, Sweden

Division of Ser. No. 34,884, May 1, 1979, Pat. No. 4,289,172.

This application Feb. 6, 1981, Ser. No. 232,324

Claims priority, application Sweden, May 31, 1978, 7806324

Int. Cl.³ B65H *81/00*; F16L *9/14*

U.S. Cl. 156—195 **28 Claims**

1. A process of manufacturing a reinforced bitumen pipe comprising the steps of:

a. covering a mandrel with an insulating glass fiber layer,

b. successively building up on the outer side of the glass fiber layer a reinforced thermosetting resin layer and causing said resin layer to partially penetrate into the glass fiber layer without finding its way all through said layer,

c. curing the thermosetting resin layer, and

d. coating it after curing with outer and inner bitumen layers, which are caused to partially penetrate into the adjoining insulating glass fiber layer.

4,339,292

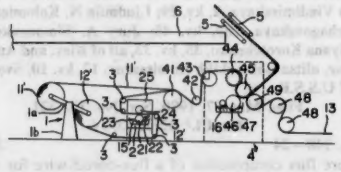
METHOD FOR PRODUCING A REINFORCED, DOUBLE-FACED CORRUGATED BOARD

Shuji Itoh, Takaoka, and Yoji Yoshida, Nagoya, both of Japan, assignors to Kyokuto Fatty-Acid Corporation, Tokyo, Japan

Division of Ser. No. 52,581, Jun. 27, 1979, Pat. No. 4,274,905, which is a division of Ser. No. 853,568, Nov. 21, 1977, abandoned. This application Feb. 10, 1981, Ser. No. 233,281

Int. Cl.³ B32B *3/28*; B31F *1/20*

U.S. Cl. 156—206 **2 Claims**



1. A method for producing a reinforced, double-faced corrugated board having a reinforced area of lesser width than the width of the entire board, said method comprising:

coating a second corrugating layer on one side with an adhesive coating;

contacting the adhesive-coated side of said second corrugating layer with one side of a first corrugating layer of greater width than said second layer;

heating the resultant assembly;

subjecting the heated assembly to moist heat;

corrugating the moistened assembly between heated corrugating rollers and applying a second adhesive coating to one side of said first and second layers following the

corrugating process, said adhesive being applied over said second corrugated layer and said first corrugated layer surrounding said second layer;

affixing a bottom facing liner of substantially the same width as said first corrugated layer against the adhesive-coated side of said first and second corrugated layers; and

affixing, by means of an adhesive coating, a top facing liner of substantially the same size as said first corrugated layer to the second side of said first corrugated layer opposite the side to which said second corrugated layer is affixed, said top liner being affixed after said bottom liner is affixed.

4,339,293

PROCESS AND MACHINE FOR DISPOSING OF STICKY SHEET

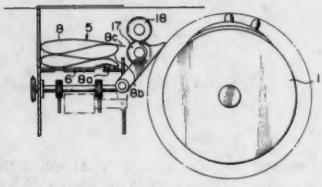
Yasuhiro Takahashi, Tokyo; Yoshiharu Ohinata, Toride, and Matsuo Nakamura, Tokyo, all of Japan, assignors to Riso Kagaku Corporation, Tokyo, Japan

Filed Jan. 22, 1981, Ser. No. 227,257

Claims priority, application Japan, Feb. 15, 1980, 55/17391

Int. Cl.³ B31F *1/34*

U.S. Cl. 156—227 **9 Claims**



1. A process for disposing of a sticky sheet, comprising the steps of:

(a) feeding said sticky sheet in a first direction substantially parallel to its surface so that the leading edge of said sticky sheet in said first direction is abutted against a stopper construction; subsequently

(b) further feeding said sticky sheet in said first direction so that said sticky sheet is folded up into a plurality of layers superposed in a second direction substantially perpendicular to the surface of said sticky sheet during the abovementioned feeding step, said layers then resting upon a support construction which extends from the lower part of said stopper construction in the direction opposite to said first direction; and subsequently

(c) moving said sticky sheet in a third direction substantially perpendicular to said first and second direction so as to dispose of said sticky sheet, while compressing together said superposed layers in said second direction so as to stick together said superposed layers.

4,339,294

METHOD AND APPARATUS FOR MAKING REELED STRIP MATERIAL

Thomas S. Jones, Billericay, England, assignor to Ciba-Geigy AG, Basel, Switzerland

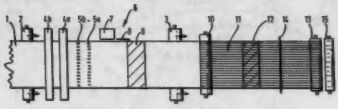
Filed Dec. 10, 1980, Ser. No. 214,943

Claims priority, application United Kingdom, Dec. 19, 1979, 7943707

Int. Cl.³ B32B *31/18*

U.S. Cl. 156—252 **6 Claims**

1. A method of preparing reeled slit web material which comprises transporting a web of material past a punching station and punching a series of holes or slots across the width of the web, then applying across the web material a strip of material covered with pressure sensitive adhesive which adheres to the web material so that all the punched holes or slots are covered by the applied material, passing the web material to a slitting machine which slits the web into strips so that each strip contains a covered punched hole or slot with the covering on the outer side of the strip as it is reeled up, cutting each strip so that a covered punched hole or slot is at or close to either the leading end or the trailing end of each strip, then when the punched hole or slot is close to the leading end of the strip leading each strip to a reeling core and pressing down the leading end on the core so that the pressure sensitive adhesive



adheres thereto through the punched hole or slot and secures the strip to the core and reeling up the strip on the core and/or when the punched hole or slot is at or close to the trailing end of each strip reeling the strip on to the core until all the strip is wound on the core and then pressing down the trailing end of the strip on the underlying turn of material so that pressure sensitive adhesive adheres thereto through the punched hole or slot and secures the trailing end of the strip to the reeled strip.

4,339,295

HYDROGEL ADHESIVES AND SANDWICHES OR LAMINATES USING MICROWAVE ENERGY

John W. Boretos, Rockville, Md., and Norio Iriguchi, Fuji, Japan, assignors to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.

Continuation of Ser. No. 971,550, Dec. 20, 1978, abandoned. This application Jun. 23, 1980, Ser. No. 161,823

Int. Cl.³ B29C *19/02*

U.S. Cl. 156—275.7 **2 Claims**

1. A method of bonding substrates using a hydrogel adhesive selected from one member of the group consisting of an interpolymer of poly(N-vinyl-2-pyrrolidone)/polyurethane and a polyurethane derived from an isocyanate and a polyglycol wherein the hydrogel adhesive is applied to each of the substrates to be joined, the hydrogel surfaces contacted and the assembly so formed thereafter exposed to microwave energy to effect bonding of the substrates, said bonding being carried out at atmospheric pressure and the resulting bond being temporary and frangible by water.

2. A method of bonding substrates using a hydrogel adhesive selected from one member of the group consisting of an interpolymer of poly(N-vinyl-2-pyrrolidone)/polyurethane and a polyurethane derived from an isocyanate and a polyglycol wherein the hydrogel adhesive is applied to each of the substrates to be joined, the hydrogel surfaces contacted and the assembly so formed thereafter exposed to microwave energy to effect bonding of the suustrates, said bonding being carried out at elevated pressure in a pressure vessel and the resulting bond is permanent.

4,339,296

APPARATUS FOR ADJUSTABLY FORMING PATTERN IN A STRIP

Michael T. Gursky, and William W. Pelhoda, both of Lehigh County, Pa., assignors to Western Electric Co., Inc., New York, N.Y.

Division of Ser. No. 141,434, Apr. 7, 1980, Pat. No. 4,320,192, which is a division of Ser. No. 8,621, Feb. 1, 1979, Pat. No. 4,227,983. This application Apr. 13, 1981, Ser. No. 253,455

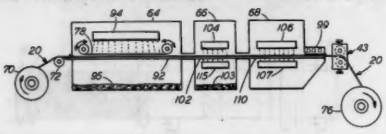
Int. Cl.³ C23F *1/02*

U.S. Cl. 156—345 **14 Claims**

1. Apparatus for forming a pattern in a strip of metal foil having no substantial resistance to bending, such strip being disposed in a substantially horizontal plane, comprising:

means for driving the strip in a lengthwise direction;

means for guiding the driven strip over support means through a succession of substantially simultaneously operating, forming means for forming the pattern in the strip, each means requiring a separate exposure time interval suitable for such forming; and



means, unattached to the strip, for shielding said strip at one or more of the forming means such that, along a portion of each respective forming means, the pattern is generally shielded and, along another portion of the respective forming means, the pattern on the strip is generally exposed for a respective time interval suitable for said forming.

4,339,297

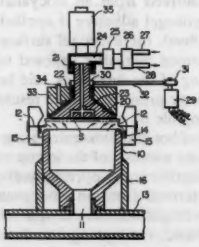
APPARATUS FOR ETCHING OF OXIDE FILM ON SEMICONDUCTOR WAFER

Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan

Filed Apr. 14, 1981, Ser. No. 254,043

Int. Cl.[3] B44C 1/22; C03C 15/00, 25/06

U.S. Cl. 156—345 **6 Claims**



1. An apparatus for applying photo-etching on one surface of a semiconductor wafer formed with oxide film, which comprises;

a cup-shaped basin having at the bottom thereof a vertical passage for introducing etching liquid,

a chuck rotatably supported above said basin for vacuum-absorbing a semiconductor wafer at the bottom surface thereof,

support means for supporting a wafer temporarily and horizontally before the wafer is vacuum-absorbed by the chuck,

said one surface of a wafer which is downward facing being contacted with etching liquid that is blown vertically upward through said vertical passage of the basin, to thereby prevent the upper surface of a wafer from being contacted with etching liquid, and

means for rotating said chuck to remove any gas resulted on the one surface of a wafer.

4,339,298

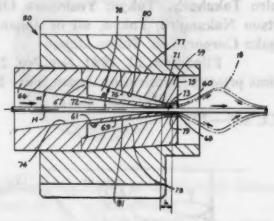
APPARATUS FOR INSULATING RELATIVELY FLEXIBLE CONDUCTORS

William M. Kanotz, Baldwin, Md.; John J. Mottine, Jr., Red Bank; Robert F. Staats-Westover, Princeton, both of N.J., and Max K. Wilson, Cockeysville, Md., assignors to Western Electric Company, Inc., New York, N.Y.

Filed Jan. 29, 1981, Ser. No. 229,434

Int. Cl.[3] B29D 23/05

U.S. Cl. 156—498 **5 Claims**



1. An apparatus for tube extruding a crystalline thermoplastic elastomer about a relatively flexible conductor, said apparatus including:

an extrusion head having a passage therethrough;

an extrusion die mounted at one end of said extrusion head, said die having an exit port which communicates through a cylindrical land, having a length L, with a cavity of said extrusion die, said die cavity including a generally frustoconical shaped portion which converges toward said land;

means for advancing successive increments of a length of a relatively flexible conductor along a path which is aligned with an axis of said cavity of said die;

a core tube having a passageway through which the conductor is advanced, said core tube being mounted in said cavity of said die with said passageway in axial alignment with said exit port of said die for guiding the conductor toward said exit port and with a free end of said core tube being positioned within said land of said die and spaced from said exit port a distance which is in the range of 0.3 to 0.5 L, said die cavity having an inner surface which cooperates with an outer surface of said core tube to define a flow passage that communicates with said exit port;

means for moving while working the thermoplastic elastomer along said flow passage and through said exit port of said die as an extrudate which is spaced from the conductor adjacent to said free end of said core tube;

means for expanding the extrudate outwardly from the conductor and for cooling the extrudate to orient molecularly the thermoplastic elastomer and enhance its crystalline growth; and

means for controlling said advancing means and said means for expanding the extrudate outwardly to cause the extrudate to be drawn down concentrically about the conductor after a predetermined time to form an insulation cover which can move relative to the conductor with the molecularly oriented crystalline elastomer being effective to provide an insulated conductor having a substantially uniform diameter.

4,339,299

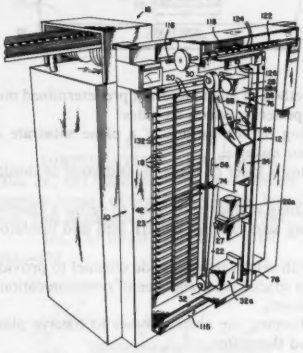
SHEET BINDING SYSTEM

Donald L. Snellman, 2807 W. Galer, Seattle, Wash. 98199; Barry J. Lewis, 31511 41st Ave. SW., Federal Way, Wash. 98003; Arthur G. Saunders, 19827 Maple Valley Hwy., Maple Valley, Wash. 98038, and Wesley W. Hester, 1007 144th Pl. SE., Bellevue, Wash. 98007

Division of Ser. No. 961,565, Nov. 17, 1978, Pat. No. 4,242,174. This application Mar. 3, 1980, Ser. No. 126,450

Int. Cl.[3] B32B *31/00*; B65H *37/00*; B05C *1/00*

U.S. Cl. 156—563 3 Claims



1. An adhesive binding apparatus for edge binding multiple sets of sheet material held in a stack of multiple trays, comprising:

adhesive application means including an endless adhesive transfer belt;

an adhesive dispenser for metering adhesive onto the transfer belt; and

means metering a continuous strip of adhesive from the adhesive dispenser onto the transfer belt of narrower width than the width of the belt so that the adhesive does not migrate to the back side of the belt, the metering means including a metering block provided with raised lands on opposite sides thereof parallel to the direction of travel of the adhesive transfer belt and spaced apart to form a well therebetween having a width less than the width of the adhesive transfer belt for holding the adhesive, a passage in the metering block for receiving the adhesive from the adhesive dispenser to the well, an insert at the lower end of the well having a thickness less than the depth of the well for controlling the thickness of adhesive metered onto the adhesive transfer belt, and cushion means engaging the side of the adhesive transfer belt opposite the metering block for biasing the adhesive transfer belt into contact with the raised lands of the metering block with sufficient force to substantially prevent the adhesive metered onto the adhesive transfer belt from migrating beyond the edges of the adhesive transfer belt.

4,339,300

PROCESS FOR SMOOTHING SURFACES OF CRYSTALLINE MATERIALS

Lowell A. Noble, 18138 Bancroft Ave., Monte Sereno, Calif. 95030

Filed Jul. 25, 1977, Ser. No. 818,817

Int. Cl.[3] C30B *23/08*

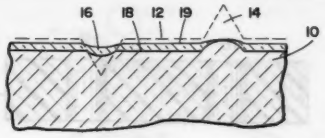
U.S. Cl. 156—601 3 Claims

1. The process of surface-polishing a crystalline body comprising the steps of:

(a) heating said body to a temperature less than the melting temperature thereof and greater than two-thirds of said melting temperature thereof;

(b) removing material from the surface of said body to be polished at a given rate and substantially atomically by sputtering;

(c) simultaneously depositing material by sputtering of material from another body of the same composition as the



material of said body substantially atomically on said surface of said body to be polished at a rate closely approaching and not substantially greater than said given rate of removal and

(d) controlling at least one of said removal rate and said deposition rate independently of the other to establish and maintain a chemical non-equilibrium condition.

4,339,301

METHOD FOR PRODUCING A SINGLE CRYSTAL OF FERRITE

Soichiro Matsuzawa, Kuwana, and Syunzo Mase, Tobishima, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Filed Apr. 20, 1981, Ser. No. 255,506

Claims priority, application Japan, May 2, 1980, 55/59167

Int. Cl.[3] C30B *1/10*

U.S. Cl. 156—603 3 Claims

1. In a method for producing single crystal of ferrite in which a polycrystal of ferrite and a single crystal of ferrite are heated in contact with each other to grow the single crystal of ferrite toward the polycrystal of ferrite, the improvement comprising using as the polycrystal of ferrite a polycrystal of ferrite produced by using iron oxide containing iron oxide having spinel structure, iron oxide having hysteresis of spinel structure of mixture of these iron oxides in an amount of not less than 60% by weight calculated as Fe_2O_3 and effecting the heating at a temperature lower than the temperature at which the discontinuous grain growth of the polycrystal of ferrite is caused.

4,339,302

SEMICONDUCTOR MATERIALS

Marc M. Faktor, Bushey Heath, and John Haigh, Ipswich, both of England, assignors to The Post Office, London, England

Filed Sep. 5, 1980, Ser. No. 184,620

Claims priority, application United Kingdom, Sep. 10, 1979, 7931278; Dec. 28, 1979, 7944418

Int. Cl.[3] C30B *29/40*

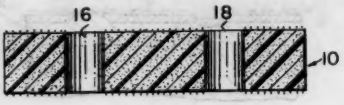
U.S. Cl. 156—605 19 Claims

1. A process for purifying a molten Group III element Q selected from the group consisting of gallium, indium, thallium and mixtures thereof in admixture with a Group VI element X selected from the group consisting of oxygen, sulfur, selenium and tellurium, the purification being sufficient to allow the epitaxial growth of a substantially dopant-free crystal Q from molten QX, said process comprising adding an element M, which is an alkaline earth metal excluding magnesium and which is capable of forming with the element X a stable solid compound substantially insoluble in liquid Q, to the melt provided that, if the M atoms are not too large to enter the lattice of the crystal, the stable solid compound MX and any excess M are separated from the melt.

4,339,303
RADIATION STRESS RELIEVING OF SULFONE POLYMER ARTICLES

David C. Frisch, Baldwin, and Wilhelm Weber, Hicksville, both of N.Y., assignors to Kollmorgen Technologies Corporation, Dallas, Tex.

Filed Jan. 12, 1981, Ser. No. 223,944
Int. Cl.[3] B44C 1/22; C03C 15/00, 25/06; C23F 1/02
U.S. Cl. 156—629 9 Claims



2. A method of preparing a blank for use in the preparation of a printed circuit board which method comprises:

exposing a sulfone polymer film, sheet or substrate to electromagnetic radiation at one or more ranges of frequencies which are capable of being absorbed by said film, sheet or substrate and which are effective for stress relieving essentially without heat induced softening or flowing of the sulfone polymer, for a time period sufficient to absorb enough energy to stress relieve and/or stabilize the sulfone polymer against stress cracking, the radiation selected from the group consisting of microwave, infrared and ultraviolet radiation;

mechanically treating said film, sheet or substrate to produce holes therethrough;

repeating the radiation treatment step;

chemically treating said film, sheet or substrate with a polar solvent capable of swelling the outer surface of said film, sheet or substrate to promote adhesion of metal to the surface thereof after an etching step; and

treating the surface of said film, sheet or substrate with a highly oxidizing solution or with a plasma at a temperature and for a time period sufficient to provide sites for chemical and/or mechanical linking of the surface to a metal layer attached thereto.

4,339,304
METHOD OF TREATING DIAMOND

Anatoly P. Grigoriev, ulitsa Ordzhonikidze, 5, kv. 29; Sara K. Lifshits, ulitsa Dzerzhinskogo, 3, kv. 38, and Pavel P. Shamaev, ulitsa Pionerskaya, 50/1, kv. 13, all of Yakutsk, U.S.S.R.

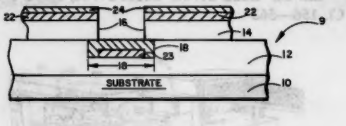
Filed Dec. 30, 1980, Ser. No. 221,209
Int. Cl.[3] B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—635 3 Claims

1. The method of treating diamond, which comprises contacting a diamond with a template made of a metal or an alloy which at a temperature of about 600° C. to 1800° C. dissolves the diamond carbon, heating said diamond and template in contact therewith at a temperature of about 600° C. to about 1800° C. under vacuum, or in an inert gas atmosphere or in an atmosphere of a gas which at said temperature does not react with diamond but does react with the diamond carbon which becomes dissolved in said metal or alloy, whereby said template in contact with said diamond at said temperature in said atmosphere dissolves diamond carbon in contact therewith, thus changing the appearance of said diamond.

4,339,305
PLANAR CIRCUIT FABRICATION BY PLATING AND LIFTOFF

Addison B. Jones, Yorba Linda, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Feb. 5, 1981, Ser. No. 231,712
Int. Cl.[3] B44C 1/22; C03C 15/00, 25/06; B29C 17/08
U.S. Cl. 156—650 24 Claims



1. The method of manufacturing predetermined microcircuit conductor patterns, which includes:

(a) forming on the surface of a plane substrate a layer of insulator material,

(b) forming a layer of resist on said layer of insulator material,

(c) patterning said layer of resist to define a channel pattern,

(d) etching said channel pattern into said insulator material layer

(dd) with relatively overwide channel to provide channel bases spaced from and free of communication with said substrate,

(e) conditioning the channel bases to receive plating material, and thereafter

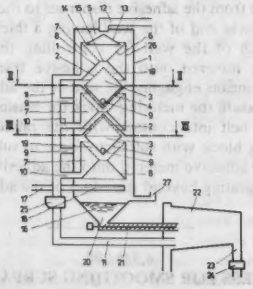
(f) filling said overwide channels with said plating material on said conditioned bases spaced from the substrate and extending to a height at least substantially co-planar with said insulator material to define said predetermined conductor patterns,

(g) removing said mask and plated material thereon to uncover completely said conductor.

4,339,306
APPARATUS FOR DRYING ORGANIC MATERIAL, PARTICULARLY BROWN COAL

Alois Janusch, Leoben-Seegraben, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Oct. 14, 1980, Ser. No. 196,768
Claims priority, application Austria, Oct. 15, 1979, 6712/79
Int. Cl.[3] B01D 1/14
U.S. Cl. 159—15 18 Claims



1. Apparatus for drying organic materials, particularly brown coal, by means of steam and of hot water, comprising a space maintained under a pressure exceeding atmospheric pressure, through which space the organic materials are fed in form of a sludge or suspension and in which space the organic materials are at least partially separated from the water, characterized in that at the upper end of the space maintained under a pressure exceeding atmospheric pressure at least one supply

opening is provided, that at the lower end of said space at least one discharge opening for solid materials is provided, that a steam supply line opens into the lower end of said space and in that between said supply opening and said discharge opening sieves are obliquely arranged which are roofing chambers limited by water-impermeable walls and having drain channels connected thereto and in that further a plurality of sieves is arranged in the manner of cascades one above the other, the bottom edges of the sieves being located above the most elevated area of the sieve arranged immediately below each sieve considered.

4,339,307

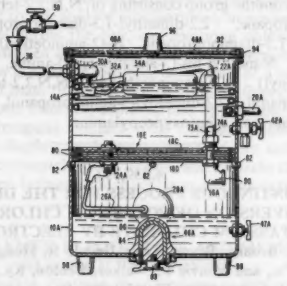
DISTILLATION APPARATUS

John C. Ellis, Jr., 493 Ellendale Ave., Port Chester, N.Y. 10573

Continuation-in-part of Ser. No. 761,332, Jan. 21, 1977, abandoned. This application Mar. 20, 1979, Ser. No. 22,321

Int. Cl.³ B01D *3/02*; C02F *1/04*

U.S. Cl. 202—176 **9 Claims**



1. Water distillation apparatus comprising a housing having a bottom, a peripheral side wall and an open top, a partition within and disposed transversely of said housing to form upper and lower chambers, a condenser within said upper chamber having an inlet and outlet, said inlet extending into said lower chamber and said outlet extending from said housing, tubular means coupling said chambers, means for supplying water to be distilled to said upper chamber to at least partially immerse said condenser and feed water to said lower chamber, means for controlling the flow of water to said lower chamber to maintain a predetermined water level therein, means for the circulation of air over the surface of the water in said upper chamber whereby the water in said lower chamber upon being heated will vaporize, flow through said condenser which is cooled by the surrounding water to condense the vapor and discharge the condensate, the heat imparted to the water in the upper chamber liberating volatile impurities in the water prior to distillation which impurities are constantly removed by said circulation means and an electric heating element in said lower chamber, said condenser comprising resilient tubing in the form of a coil with vertically spaced turns, an inlet on the uppermost turn and an outlet on the lowermost turn with the outlet extending through and secured to said housing wall, said partition including a peripheral gasket of resilient material engaging said partition and frictionally engaging the wall of said housing, and said inlet including means extending through and secured to said partition whereby said coil functions to impede displacement of said partition caused by pressure of steam in said lower chamber.

4,339,308

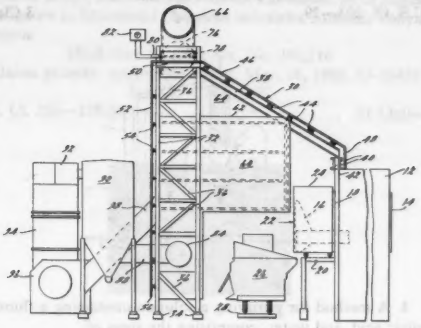
MULTI-CELL EMISSION CONTROL SYSTEM

Morton E. Harris, Bloomfield Hills, Mich., assignor to The Mercier Corporation, Birmingham, Mich.

Filed Dec. 29, 1980, Ser. No. 220,851

Int. Cl.³ C10B *33/00, 33/12, 41/00*

U.S. Cl. 202—263 **6 Claims**

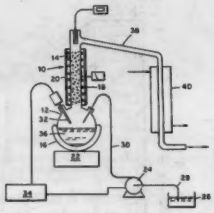


1. In an apparatus for controlling emissions to the atmosphere of gaseous and particulate effluents from an aligned row of plural transverse reactors disposed on a base each having a port in the discharge end thereof for intermittently discharging a reaction mass therefrom and a carriage movable along the aligned discharge ends for receiving the reaction mass, the improvement comprising a three-dimensional enclosure extending along the discharge end of the reactors including a generally upright first wall having a lower portion disposed in substantially gas sealing relationship on the discharge end portion of the reactors, a generally upright second walls spaced outwardly from the first wall having a lower edge thereof spaced upwardly from the base, a roof panel connecting said first and second walls at a position above the reactors, a pair of end walls connecting said first, second and roof walls; and at least one intermediate wall extending transversely between said first and second and roof walls dividing said enclosure into a plurality of cells, said intermediate wall formed with an opening adjacent to said roof wall for providing communication between the upper portions of adjacent cells, said enclosure including a framework for supporting said roof wall and first wall in a substantially cantilevered fashion above the discharge ends of the reactors, central duct means including a plurality of inlet ports each disposed in communication with a cell at a position adjacent to the underside of said roof wall, at least a portion of said roof wall angularly inclined upwardly defining an upper collection zone for the effluent and disposed in communication with said inlet port, valve means in each inlet port positionable to and from a substantially closed standby position and an open exhaust position, exhaust means connected to said duct means operable at a low standby capacity and a high exhaust capacity for withdrawing effluent from said cells, said duct means including extraction means for extracting particulate matter from the exhausted effluent, and means for moving said valve means in an inlet port of a selected cell in which a discharge operation is being performed from said standby to said exhaust position and for activating said exhaust means from said standby to said exhaust capacity for at least the duration of said discharge operation and back to said standby position and standby capacity at the conclusion thereof, said valve means when in said standby position disposed in a partially open position to continuously exhaust any effluent accumulation within each cell between successive discharge operations.

4,339,309
METHOD FOR REMOVING FLUORIDE CONTAMINATION FROM NITRIC ACID

David J. Pruett, Knoxville, and William B. Howerton, Kingston, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 5, 1981, Ser. No. 260,622
Int. Cl.³ B01D 3/16, 53/20
U.S. Cl. 203—29 3 Claims



1. A method for purifying a solution containing a fluoride, nitric acid, and water, comprising the steps of:

converting said solution to a vapor;

contacting said vapor with particles formed of a material selected from the group consisting of calcined alumina, calcined zirconia, or mixtures thereof, to combine the fluoride in said vapor with the particles; and

condensing the vapor from which the fluoride has been removed.

4,339,310
METHOD OF SURFACE TREATMENT OF TIN PLATED CANS AND TIN PLATED STEEL SHEETS

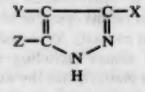
Nobuyuki Oda, Yokohama, and Haruyoshi Terada, Tanashi, both of Japan, assignors to Hooker Chemicals & Plastics Corp., Warren, Mich.

Filed Nov. 26, 1980, Ser. No. 210,706
Int. Cl.³ C23F 7/14
U.S. Cl. 204—38 R 8 Claims

1. A chromium-free aqueous composition, comprising:

(a) at least one soluble compound selected from the group consisting of titanium and zirconium compounds;

(b) at least one pyrazole compound of the formula:



wherein X, Y and Z are independently selected from the group consisting of hydrogen atom, hydroxyl group, alkyl group of up to 5 carbon atoms, amino group and nitro group;

(c) at least one myoinositol phosphate ester having 2–6 phosphate groups per molecule; and

(d) at least one silicon compound;

said composition exhibiting a pH value in the range of from 1.0 to 10.0.

4,339,311
BATHS AND PROCESSES FOR ELECTRODEPOSITING PALLADIUM

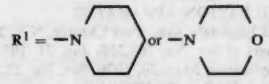
Michael Branik, Muehlheim, Fed. Rep. of Germany, assignor to Heraeus Quarzschmelze GmbH, Hanau am Main, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 192,753
Claims priority, application Fed. Rep. of Germany, Oct. 2, 1979, 2939920
Int. Cl.³ C25D 3/52
U.S. Cl. 204—47 6 Claims

5. An ammonia-free aqueous bath for electrodepositing palladium containing a palladium (II) compound and an amine of the formula:

$$R^1—CH_2—CH_2—NH_2$$

wherein

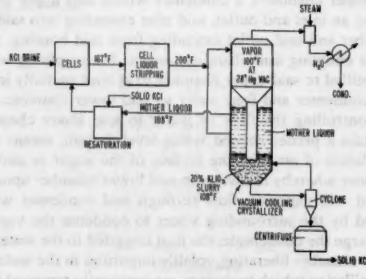


6. An ammonia-free aqueous bath for electrodepositing palladium containing a palladium (II) compound and an amine selected from the group consisting of: N,N,2,2-tetramethyl-1,3-diaminopropane, 2,2-dimethyl-1,3-diaminopropane, N,N-dimethyl-1,3-diaminopropane, N-(2-aminoethyl)-1,3-diaminopropane, N-methyl-bis-(3-aminopropyl)-amine, N,N'-bis-(3-aminopropyl) 1,2-diaminoethane, N,N,2,2-tetramethyl-3-aminopropanol, 2,2-dimethyl-3-aminopropanol, 3-methoxypropylamine and 3-butoxypropylamine.

4,339,312
CONTINUOUS PROCESS FOR THE DIRECT CONVERSION OF POTASSIUM CHLORIDE TO POTASSIUM CHLORATE BY ELECTROLYSIS

Wayne E. Brooks, Bryan, Tex.; Jimmie R. Hodges, Downingtown, Pa., and Morris P. Walker, Benton, Ky., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 10, 1980, Ser. No. 185,972
Int. Cl.³ C25B 1/14, 1/26
U.S. Cl. 204—95 10 Claims



1. A continuous closed-loop process for the direct production by electrolysis of potassium chlorate from potassium chloride, comprising the steps of:

(a) electrolyzing an aqueous solution of potassium chloride in an electrolytic cell having a metal cathode and a coated metal anode, said coating comprising a precious metal, a precious metal alloy, a precious metal oxide or a platinate,

(b) passing said aqueous solution through a heat exchanger using a heated cooling medium which is at a temperature which is below the equilibrium temperature of said aque-

ous solution in said cell but above the temperature at which potassium chlorate crystallizes from solutions of the concentration selected for the process;
(c) removing from said cell an effluent solution containing potassium chlorate formed by said electrolysis of potassium chloride;
(d) cooling said effluent until crystals of the chlorate form;
(e) removing said chlorate crystals from said effluent;
(f) enriching said effluent by adding a controlled amount of potassium chloride thereto; and
(g) returning and adding the enriched effluent to said electrolytic cell for further electrolysis, at a volume rate equal to the rate at which the unenriched effluent is removed from the cell in step (c).

4,339,313

METHOD OF OPERATING AN ELECTROLYTIC CELL

Thomas A. Rechlicz, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 127,291, Mar. 5, 1980. This application May 30, 1980, Ser. No. 154,707
Int. Cl.³ C25B *1/34, 13/02, 13/03*
U.S. Cl. 204—98 **22 Claims**

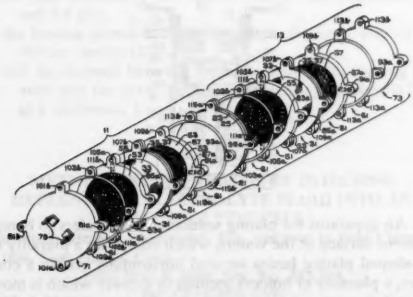
1. In a method of operating an electrolytic cell having an anolyte compartment with an anode therein, a catholyte compartment with a cathode therein, the anolyte compartment being separated from the catholyte compartment by an asbestos diaphragm, which method comprises feeding alkali metal chloride brine to the anolyte compartment, imposing an electrical potential across the cell, and evolving chlorine at the anode and hydrogen at the cathode, the improvement wherein the diaphragm is slurry deposited, comprised of a self-adherent, entangled mass of nonwoven unoriented fibers, and substantially spaced from the cathode, said diaphragm and cathode having irregular contact with channels therebetween, whereby the diaphragm facing surfaces of the cathode are substantially contacted by electrolyte, and wherein the hydrogen is collected between the diaphragm and the cathode.

4,339,314

SOLID POLYMER ELECTROLYTE AND METHOD OF ELECTROLYZING BRINE

Howard H. Hoekje, Portland, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 14,465, Feb. 23, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,174
Int. Cl.³ C25B *1/34, 13/08, 1/06, 11/10*
U.S. Cl. 204—98 **16 Claims**



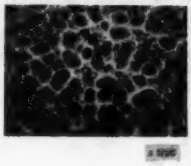
1. In a method of electrolyzing brine in an electrolytic cell having a permionic membrane with cathodic electrocatalyst bearing upon one surface of the permionic membrane, which method comprises feeding alkali metal chloride to the cell, imposing an electrical potential across the cell, and evolving hydrogen at the cathode electrocatalyst, the improvement wherein the cathodic electrocatalyst comprises particles consisting essentially of borides of transition metals chosen from the group consisting of borides of titanium, vanadium, niobium, tantalum, and tungsten.

4,339,315

PROCESS FOR PREPARING LITHOGRAPHIC PRINTING PLATE BASES

Nobuji Kikuchi, Machida; Yoshiyuki Kisaka; Kazuo Torige, both of Tokyo, and Masayuki Onose, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Mar. 6, 1981, Ser. No. 241,216
Claims priority, application Japan, Mar. 26, 1980, 55-38469
Int. Cl.³ C25F *3/02*
U.S. Cl. 204—129.85 **11 Claims**



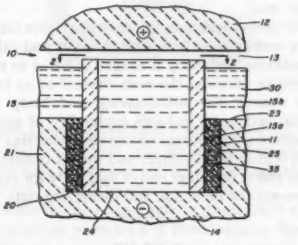
1. A process for preparing lithographic printing plate bases, which comprises electrolytically etching a sheet made of aluminum or an aluminum alloy in an aqueous electrolytic solution containing 0.1 to 1 mole/l of hydrochloric acid and 0.01 to 1 mole/l of citric or malic at a bath temperature of 10° to 40° C.

4,339,316

INTERMEDIATE LAYER FOR SEATING RHM TUBES IN CATHODE BLOCKS

Richard W. Peterson, Lower Burrell, and Perry A. Foster, Jr., New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Sep. 22, 1980, Ser. No. 188,985
Int. Cl.³ C25C *7/00, 3/06, 7/02*
U.S. Cl. 204—243 R **11 Claims**



1. A cathode suitable for use in an electrolytic cell wherein metal is produced in a molten state by electrolyzing a compound of the metal in a chamber between an anode and a cathode, said cathode being spaced from the anode and comprising
(a) a base having a principal surface facing the anode, said base defining a seat recessed from the principal surface, said seat including a side wall intersecting the principal surface;
(b) a body of a refractory hard metal including
(1) a proximal portion carried by the base and embedded in the seat, said proximal portion including a wall segment opposed to the side wall of the seat, and

(2) a distal portion extending outwardly of the principal surface in the direction of the anode; and

(c) an intermediate layer of fibrous carbonaceous material for cushioning differential thermal expansion and contraction of the base and the body, said layer extending between and engaging the side wall of the seat and the wall segment of the proximal portion, said layer being recessed from said principal surface.

4,339,317

DEVICE FOR PERFORMING MEASUREMENTS ON FLUIDS, DIRECTLY IN THE SAMPLE CONTAINER

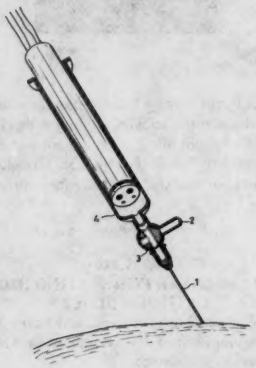
Franco Meiattini, Siena; Giorgio Papeschi, Florence; Paolo Tarli, Monteriggioni, and Paolo Neri, Siena, all of Italy, assignors to Instituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A., Siena, Italy

Continuation of Ser. No. 52,506, Jun. 27, 1979, abandoned. This application Nov. 5, 1980, Ser. No. 204,220

Claims priority, application Italy, Jul. 5, 1978, 25351 A/78

Int. Cl.³ G01N *27/28, 27/30*

U.S. Cl. 204—195 B **10 Claims**



1. A device for performing analytical measurements on body fluids, such as blood, comprising:

a disposable syringe having opposing ends with a disposable needle at one end for drawing the body fluids within the syringe, and

a reusable cylindrical body slidably insertable into and movable in said syringe from and through said other syringe end, wherein said body is shaped relative to the walls of the syringe between the ends thereof so as to act like a piston therein for withdrawing said body fluids, and wherein said body includes a plurality of sensors at the end thereof adjacent said needle for contacting body fluids drawn within said syringe, and means connected to said sensors and at the other end of said body for connection to instruments for detection and displaying data.

4,339,318

OXYGEN GAS ANALYZING DEVICE

Takeo Tanaka, and Osamu Yamamoto, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

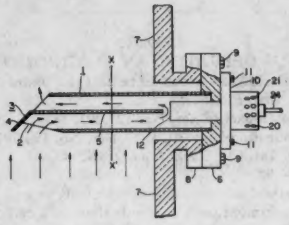
Filed Dec. 19, 1980, Ser. No. 218,237

Claims priority, application Japan, Dec. 27, 1979, 54/180331[U]; Nov. 4, 1980, 55/157769[U]

Int. Cl.³ G01N *27/58*

U.S. Cl. 204—195 S **11 Claims**

1. An oxygen gas analyzing device comprising: a solid electrolytic element having an oxygen ion dependent conductivity; first and second porous electrodes provided on respective first and second sides of said element; a gas sampling tube adapted to protrude into a flue through a wall of said flue, said sampling tube bringing gas from said flue into contact with said first electrode while an oxygen reference medium is brought into contact with said second electrode to generate an electromotive force between said two electrodes corresponding to the oxygen density of said gas; a hollow cylindrical ceramic tube; said solid electrolytic element being disposed in said cylindrical ceramic tube, dividing the hollow interior of said ceramic tube into first and second interior portions; a heater element for heating said solid electrolytic element disposed in the wall of said ceramic tube, said oxygen reference medium being introduced through one end of said ceramic tube to contact said second electrode while said gas from said flue is introduced



through said gas sampling tube and through the other end of said ceramic tube to contact said first electrode; and a partition board provided in said gas sampling tube extending toward said ceramic tube from a protruding end of said gas sampling tube in said flue to divide the interior of said gas sampling tube into a gas flow-in path and a gas flow-out path, wherein the dynamic pressure of said gas flowing in said flue causes said gas to enter said gas sampling tube through said gas flow-in path to contact said first electrode, turn at the end of said partition board and flow through said gas flow-out path to return to said flue.

4,339,319

APPARATUS FOR PLATING SEMICONDUCTOR WAFERS

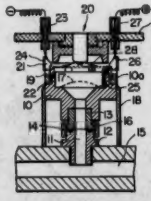
Seiichiro Aigo, 3-15-13, Negishi, Daito-ku, Tokyo, Japan

Filed Dec. 10, 1980, Ser. No. 214,638

Claims priority, application Japan, Aug. 16, 1980, 55-116251[U]

Int. Cl.³ C25D *17/06, 17/04*

U.S. Cl. 204—224 R **5 Claims**



1. An apparatus for plating semiconductor wafers to bump-plate one surface of the wafers, which comprises a plurality of cup-shaped plating basins secured horizontally within a container, a plurality of holders secured in a cover which is movable relative to and above said container, each said holder being aligned and engageable with a relevant one of said plating basins to set a semiconductor wafer therebetween, the respective plating basins including cathode and anode and being provided with a plurality of protrusions at its uppermost region, at least three of said protrusions having a pin of which tip is vertically or slantly upwards oriented and sharply pointed, said pins being used as said cathode as well as the tips of pins being adapted to support a semiconductor wafer

thereon, a circulating system for blowing up the plating liquid through the respective plating basins, said apparatus being characterized in that the top peripheral portion of each said basin is of a curved convex cross-sectional form to thereby permit the plating liquid to flow over said top peripheral portion of the basin in essentially laminar stream condition by surface tension of the plating liquid.

4,339,320

HEATED GAS COMPOSITION SENSOR STRUCTURE

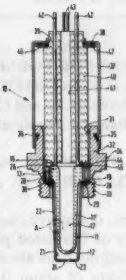
Karl-Hermann Friese, and Friedrich Esper, both of Leonberg, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 6, 1980, Ser. No. 193,944

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1979, 2942494

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—195 S **11 Claims**



1. Heated gas composition sensor structure, particularly to determine the composition of combustion exhaust gases, especially for association with an internal combustion engine having

a sensing element **(11)** made of temperature-dependent ceramic including a solid electrolyte body **(11')** of tubular form, and electrodes **(14, 18)** applied to different surface regions of said tubular body;

and a heating element **(25)** to heat the sensor element **(11)** including a tubular carrier **(22)** surrounding the sensor element,

wherein

the wall thickness of the tubular carrier **(22)** is between 0.3 and 0.8 mm;

the heating element **(25)** is secured to the inner wall of the tubular carrier **(22)**;

and the distance between the inner wall of the heating element and the outer surface of the sensing element **(11)** is, as a maximum, 1 mm.

4,339,321

METHOD AND APPARATUS OF INJECTING REPLENISHED ELECTROLYTE FLUID INTO AN ELECTROLYTIC CELL

Morton S. Kircher, Clearwater, Fla., assignor to Olin Corporation, New Haven, Conn.

Filed Dec. 8, 1980, Ser. No. 213,801

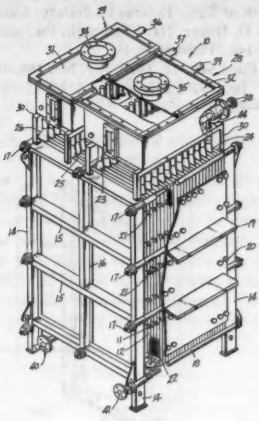
Int. Cl.³ C25B *9/00*

U.S. Cl. 204—237 **22 Claims**

1. A method of recirculating electrolyte within a filter press membrane chloralkali electrolytic cell having anolyte and catholyte disengagers in fluid flow communication with electrodes which comprises:

(a) recirculating electrolyte from the disengagers intc each electrode in a flow stream along a first direction of flow; and

(b) injecting fresh electrolyte from an electrolyte replenisher into the flow stream of recirculating electrolyte parallel to the first direction of flow before the stream enters the



electrode to thereby effect thorough mixing of the fluids prior to the fluids entering each electrode.

4,339,322

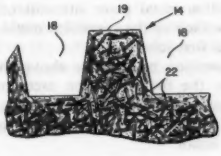
CARBON FIBER REINFORCED FLUOROCARBON-GRAPHITE BIPOLAR CURRENT COLLECTOR-SEPARATOR

Edward N. Balko, Wilmington, Mass., and Richard J. Lawrance, Hampstead, N.H., assignors to General Electric Company, Wilmington, Mass.

Filed Apr. 21, 1980, Ser. No. 142,583

Int. Cl.³ C25B *11/00, 11/12*

U.S. Cl. 204—255 **8 Claims**



1. A bipolar current collecting, fluid distributing, separator element for electrochemical cells for conducting current from the anode eletrode of one cell unit to the cathode electrode of the adjacent cell unit of the sort including:

(a) A pressure molded aggregate of electrically conductive carbon graphite particles and thermoplastic fluorocarbon polymer resin particles in a weight ratio of 2.5:1 to 16:1,

(b) The molded aggregate having a fluid impervious main body at least one recessed chamber on one side of said main body and a plurality of spaced, conductive projections extending from the base of said chamber for contacting and permitting current flow to the electrode of cell units,

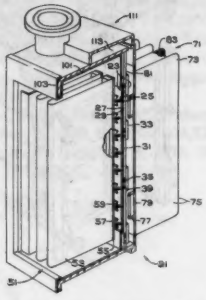
(c) Means communicating with said recessed chamber to permit introduction and removal of fluids,

the improvement which comprises randomly distributed, reinforcing graphite fibers within the pressure molded aggregate, the flexural strength, as determined by the maximum stress σ. of said fiber reinforced structure being substantially from 2300 to 6200 psi over a temperature range of 300° to 72° F., with the bulk resistivity being less than 4×10^{-3} ohms/inc.

4,339,323
BIPOLAR ELECTROLYZER ELEMENT

Colonel R. Dilmore, Portland; Carl W. Raetzsch, Jr., Corpus Christi, both of Tex.; Thomas C. Jeffery, Lake Charles, La., and Dallas D. Dupre, III, Pittsburgh, Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 18, 1980, Ser. No. 188,401
Int. Cl.³ C25B 9/04, 11/10, 13/08
U.S. Cl. 204—256 8 Claims



1. In a bipolar electrolyzer having a plurality of individual electrolytic cells electrically and mechanically in series with a bipolar element between a pair of adjacent individual cells, the bipolar element having an anodic side with the anodes of the first electrolytic cell of said pair of electrolytic cells depending therefrom, and a cathodic side with the cathodes of the second electrolytic cell of said pair of electrolytic cells depending therefrom, said anodic side of the bipolar element comprising an acidified alkali metal chloride resistant valve metal surface, and said cathodic side of the bipolar element comprising an alkaline alkali metal hydroxide resistant transition metal surface, the improvement wherein said bipolar element comprises:

a clad laminate of a valve metal sheet and a transition metal plate joined at interior surfaces thereof;

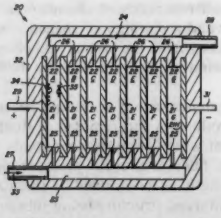
a first transition metal plate intermittently bonded to the exterior surface of the transition metal plate of the clad laminate at first joints; and

a second transition metal plate above the first joints and bonded to the first transition metal plate on the side thereof remote from the clad laminate at second joints whereby to protect the first joints from contact with catholyte liquor.

4,339,324
POLYCELL GAS GENERATOR

Richard M. Haas, Phoenix, Ariz., assignor to Henes Products Corp., Phoenix, Ariz.

Filed Dec. 3, 1980, Ser. No. 212,274
Int. Cl.³ C25B 9/00
U.S. Cl. 204—270 10 Claims



2. A polycell gas generator comprising:

a housing defining a cavity,

a plurality of parallel chambers within said housing each chamber defining a gas generating cell,

a plurality of electrode plates one electrode plate positioned between adjacent chambers,

each chamber having inlet and outlet ports extending through said housing, the lengths of the path through said housing of each port being greater than their cross-sectional width dimension,

an inlet manifold connected to each of said inlet ports of said chambers for containing electrolyte for circulation through said chambers,

an outlet manifold connected to each of said outlet ports of said chambers,

said outlet manifold being larger than said inlet manifold to eliminate any pressure buildup of electrolyte within said chamber, and

means for conducting electric current through said chambers in a series arrangement laterally to the flow of electrolyte through said chambers.

4,339,325
ONE PASS PROCESS FOR FORMING ELECTRODE BACKING SHEET

Frank Solomon, Great Neck, N.Y., and Charles Grun, Matawan, N.J., assignors to Diamond Shamrock Corporation, Dallas, Tex.

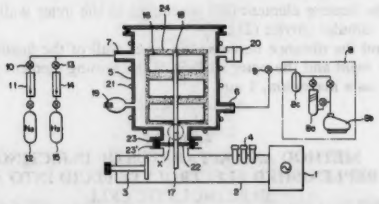
Filed Oct. 31, 1980, Ser. No. 202,583
Int. Cl.³ C25B 13/02, 13/08
U.S. Cl. 204—296 9 Claims

1. A porous, coherent, unsintered, uniaxially oriented backing (wetproofing) layer of fibrillated polytetrafluoroethylene having pore openings ranging from about 0.1 to 40 microns and having an air permeability of about 0.2 ml. per minute per centimeter squared per centimeter of water pressure, said layer being from about 5 to 15 mils thick.

4,339,326
SURFACE PROCESSING APPARATUS UTILIZING MICROWAVE PLASMA

Masahiko Hirose; Tsuyoshi Yasui, and Masahiko Yotuyanagi, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 19, 1980, Ser. No. 208,404
Claims priority, application Japan, Nov. 22, 1979, 54-150638
Int. Cl.³ C23C 15/00; C23F 1/00
U.S. Cl. 204—298 9 Claims



1. An apparatus for processing a surface of an object to be processed by utilizing microwave plasma within a plasma producing chamber, which comprises;

a microwave power-generating means;

a wave guide for transmitting microwaves generated by said microwave power-generating means;

a closed vessel constituting the plasma producing chamber provided with an evacuating means and a gas introducing means, and separated from said wave guide by a separating means;

an antenna for receiving and transmitting said microwaves,

passing through said separating means so that one end thereof extends into the wave guide and the other end thereof extends into the closed vessel; and

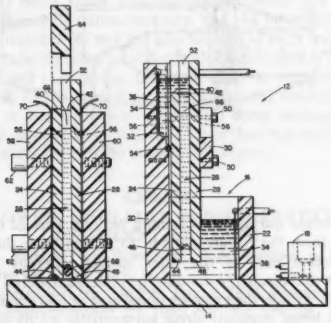
a supporting means provided within said closed vessel and attached to said antenna, capable of supporting an electroconductive object to be processed in such a manner that the antenna and the electroconductive object are electrically connected to each other.

4,339,327

MINIATURE SLAB GEL ELECTROPHORESIS SYSTEM

Jonathan M. Tyler, 9126 116th St., Edmonton, Alberta, T6G-1P9, Canada

Filed Apr. 23, 1981, Ser. No. 256,898
Int. Cl.[3] B01D *13/02*
U.S. Cl. 204—299 R 18 Claims



1. An electrophoresis system for separating organic molecules, comprising

a base

an electrophoresis tank mounted on said base, and

a pair of electrodes adapted for connection to an external electrical power source

said electrophoresis tank including

a back plate mounted on said base perpendicular thereto, said back plate having an upper reservoir adapted to receive fluid, one of said electrodes being disposed in said upper reservoir,

a lower reservoir mounted on said base adjacent said back plate adapted to receive said fluid, the other of said electrodes being disposed in said lower reservoir,

a pair of sample plates adapted to have a layer of gel therebetween releasably mounted to said back plate and parallel thereto, said sample plates having heights less than that of said back plate,

a first of said sample plates having a height less than a second of said plates is mounted adjacent to said back plate, the upper end of said first sample plate cooperating therewith for receiving said fluid in said upper reservoir and allowing said fluid to contact a said layer of gel,

the lower ends of said sample plates are immersed in said fluid of said lower reservoir for allowing said fluid to contact a said layer of gel,

a plate clamping bar adjustably mounted on and parallel to said back plate, said clamping bar being adapted to retain and maintain said sample plates adjacent and parallel to said back plate,

said layer of gel being adapted to permit migration of said organic molecules contained therein upon application of an electric field from said power source, and

whereby fluids in both said upper and lower reservoirs will be in contact with a said layer of gel to permit migration of said organic molecules contained in said gel layer.

4,339,328

PROCESS FOR THE PRODUCTION OF HIGH GRADE CARBONACEOUS BINDERS

Jürgen Stadelhofer, Dortmund; Heinz-Gerhard Franck, Bad Soden-Neuenhain; Helmut Köhler, Mulheim an der Ruhr, and Heinrich Louis, Duisburg, all of Fed. Rep. of Germany, assignors to Rütgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 11, 1981, Ser. No. 291,889
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1980, 3033075
Int. Cl.[3] C10G *1/00*; H01B *1/04*; C10C *0/00*
U.S. Cl. 208—8 LE 6 Claims

1. A process for the production of high grade carbonaceous binders, comprising producing an aromatic high grade carbonaceous material by treating from 5–40% by weight of low ash coal or similar carbon-containing raw materials with 20–80% by weight of high-boiling aromatic solvents, derived from coal, and 15–50% by weight of high-boiling aromatic solvents, derived from mineral oil, at temperatures of 300°–420° C. and for a reaction period of 1–4 hours, at a reaction pressure of up to 50 bar.

4,339,329

LIQUEFACTION OF COAL

Yoichi Kageyama, Isehara; Masato Aiura, and Kikuo Moriya, both of Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Mar. 7, 1980, Ser. No. 128,151
Claims priority, application Japan, Mar. 16, 1979, 54-30737
Int. Cl.[3] C10G *1/06*
U.S. Cl. 208—10 4 Claims

1. In a liquefaction of coal to a heavy liquefied product by heating coal with a hydrocarbon solvent under a hydrogen pressure atmosphere in the presence of a catalyst, an improvement characterized in that said catalyst is a pulverized hematite or limonite iron ore,

wherein said pulverized iron ore has a particle diameter of substantially all less than 10μ with an average particle size of about 3–4μ, with or without added sulfur or sulfur compound,

wherein said pulverized iron ore is used at a ratio of 0.1 to 10 wt.% based on the anhydrous ashless coal,

wherein said temperature for liquefaction is at 350° to 500° C.,

and wherein said hydrogen is at a partial pressure in a range of 20 to 250 kg/cm^{2}G.

4,339,330

DESALTING METHOD OF FUEL OIL

Kiyoshi Fujiwara; Katsuaki Nagatomo; Fumio Shibata; Shoji Nomura, and Shoji Yoshinaga, all of Kudamatsu, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP79/00317, § 371 Date Aug. 26, 1980, § 102(e) Date Aug. 26, 1980, PCT Pub. No. WO80/01388, PCT Pub. Date Jul. 10, 1980
PCT Filed Dec. 14, 1979, Ser. No. 205,960
Claims priority, application Japan, Dec. 27, 1978, 53/159846
Int. Cl.[3] C10G *17/00, 17/04, 33/00, 31/08*
U.S. Cl. 208—251 R 8 Claims

1. A desalting method of a fuel oil comprising mixing the fuel oil and clean water and separating and removing a heavy portion including salt-containing water from said fuel oil which is a light portion, putting the heavy portion including the salt-containing water which has been separated from the fuel oil into an evaporator to separate water and a residue from each other, evaporating and recovering water, and then reusing the water recovered by the evaporation as the clean water.

4,339,331

CROSSLINKED STARCHES AS DEPRESSANTS IN MINERAL ORE FLOTATION

Sim K. Lim, Stamford, and Richard M. Goodman, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 5, 1980, Ser. No. 213,532
Int. Cl.³ B03D 1/06
U.S. Cl. 209—167 9 Claims

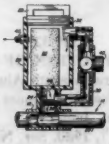
1. A process for depressing non-sulfide minerals in a flotation system which comprises adding to the flotation system, as a selective depressant, an effective amount of a crosslinked starch or starch-containing substance having from about 500 to 10,000 anhydroglucose units per crosslink.

4,339,332

PRESSURIZED CHEMICAL DISPENSER

Harold C. Jasperson, 7028 Ironwood, Orlando, Fla. 32808

Continuation of Ser. No. 131,084, Mar. 17, 1980, abandoned.
This application May 13, 1981, Ser. No. 263,129
Int. Cl.³ B01D 11/02
U.S. Cl. 210—198.1 10 Claims



1. A chlorinator system for use with a source of fluid such as a pool comprising:

fluid pump means for pumping fluid from the source to an output side;

a first fluid supply conduit having a first and second end, said first end coupled to the output side of said fluid pump means;

a filter unit having a filter input side and a filter output side said filter input side coupled to the second end of said first fluid supply conduit;

a second fluid supply conduit coupled to the output side of said filter unit whereby a pressure differential is created across the filter unit between said first conduit and said second conduit;

an offset chamber disposed above and coupled to said first fluid supply conduit;

a first coupler having an orifice on an upper most surface thereof, said first coupler disposed in said offset chamber whereby any fluid flow from said first fluid supply conduit and into said first coupler has a substantial vertical component thereby substantially preventing any non-soluble particles from flowing into the orifice of the first coupler;

a fluid type reservoir for storing a supply of a fluid soluble chemical, including an intake orifice and an output orifice; and

means disposed through said input orifice and in communication with said first coupler for creating a circulating flow of fluid inside said fluid type reservoir whereby the circulating flow assists in dissolving the supply of fluid soluble chemical in the fluid type reservoir.

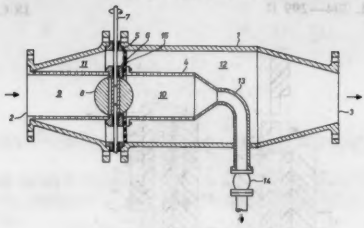
4,339,333

FILTRATION DEVICE

Peter Sjöberg, Löddeköpinge, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 12, 1979, Ser. No. 19,630
Claims priority, application Sweden, Mar. 15, 1978, 7802969
Int. Cl.³ B01D 29/20, 29/38, 37/00
U.S. Cl. 210—411 8 Claims

1. A filter device which comprises a tubular housing with an inlet for the fluid to be filtered in one end of the housing; an outlet for filtrate in the opposite end of the housing; a filter tube mounted inside the housing and extending essentially in the axial direction of the tubular housing, at least part of the filter tube wall forming a filter surface, and one end of the filter tube being openly connected to said inlet, whereas the other end being closed so that an annular filtrate conduit is formed between the housing and the filter tube; a first valve means arranged inside the filter tube to shut off the filter tube during cleaning periods, dividing the filter tube and the filter surface into an upstream part and a downstream part, and forcing the entire filtrate stream to pass through said upstream part of the filter surface into the filtrate conduit; the downstream part of the filter tube being provided with a discharge conduit comprising a second valve means to cause, by opening said second



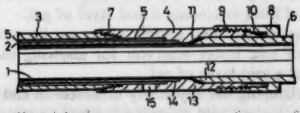
valve means during said cleaning periods, part of the filtrate stream from the filtrate conduit to stream back through the downstream part of the filter surface, thereby removing through said discharge conduit the rejected material settled on the filter surface, the cross-sectional area of said annular filtrate conduit being constant along substantially all of said downstream part of the filter tube to ensure, during said cleaning periods, a uniform backstreaming of the filter surface of said downstream part, and said first valve means being so located in the filter tube that sufficient filter surface is provided in said upstream part to maintain, during said cleaning periods, a filtrate flow through said outlet which is equal to the major part of the filtrate flow through said outlet during normal filtering.

4,339,334

TUBULAR MEMBRANE SEPARATION APPARATUS END JOINT SEAL

Tamiyuki Eguchi, and Michinobu Izumi, both of Kobe, Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

PCT No. PCT/JP79/00197, § 371 Date Mar. 28, 1980, § 102(e) Date Feb. 15, 1980, PCT Pub. No. WO80/00309, PCT Pub. Date Mar. 6, 1980
PCT Filed Jul. 26, 1979, Ser. No. 195,006
Claims priority, application Japan, Jul. 28, 1978, 53-92699
Int. Cl.³ B01D 31/00
U.S. Cl. 210—433.2 5 Claims



1. A tubular membrane separation apparatus including a separation element (1) having a tubular porous backing member with an inner surface and a semipermeable membrane formed over the inner surface of the backing member having an inside diameter, and a porous pressure-resistant tube (2) having the separation element (1) inserted therein, the apparatus being characterized by a liquid collector tube (3) having an inside diameter slightly larger than the outside diameter of the

pressure-resistant tube (2) and fitting around the pressure-resistant tube (2) to provide a narrow liquid passage (5) between the collector tube (3) and the pressure-resistant tube (2), a pair of joint members (4) detachably attached at one end of each member to each end of the collector tube (3) and supporting the end of the pressure-resistant tube (2), each joint member having an inner surface and being formed in a side portion thereof with an outlet bore (15) communicating with the liquid passage (5), the separation element (1) being detachably inserted into the pressure-resistant tube (2) projecting outwardly at its end from the end opening of the pressure-resistant tube (2) and being provided at its ends with diametrically enlarged end portions (11) respectively disposed within one of the joint members (4), a pair of connector tubes (6) inserted in the joint members (4) at the other ends thereof and detachably joined to the joint members (4), each connector tube (6) having an inside diameter approximately equal to that of the semipermeable membrane and each enlarged portion (11) of the separation element (1) being solely frustoconically tapered and spread outward toward its outer extremity, and the inner surface of each joint member (4) and the inserted end of each respective connector tube (6) being provided with frustoconically tapered faces (12) and (13) having the same taper as each enlarged portion (11) of the separation element (1), the enlarged portions (11) of the separation element (1) being sealingly held against the tapered faces (12) and (13) of the joint member (4) and the connector tube (6) at each end thereof.

4,339,335

FREE FLOWING HIGH BULK DENSITY PARTICULATE DETERGENT-SOFTENER

Harold E. Wixon, New Brunswick, N.J., assignor to Colgate Palmolive Co., New York, N.Y.

Continuation of Ser. No. 746,994, Dec. 2, 1976, abandoned. This application Mar. 27, 1980, Ser. No. 134,558

Int. Cl.[3] **C11D** *1/835, 3/12, 17/06;* **D06M** *13/46*

U.S. Cl. 252—8.8 **9 Claims**

1. A free flowing particulate detergent-softener composition of bulk density of at least 0.6 g./cc. and particle sizes in the range of 4 to 40 mesh which comprises about 20 to 40% by weight of nucleus particles of an alkali metal builder salt selected from the group consisting of sodium carbonate mixed with sodium bicarbonate, sodium carbonate, sodium bicarbonate, pentasodium tripolyphosphate, tetrasodium pyrophosphate, sodium silicate, borax, corresponding potassium salts, and mixtures thereof, and said nucleus particles having internal passageways capable of absorbing 10 to 30% by weight of liquids; about 12 to 30% by weight of a normally liquid or pasty nonionic detergent selected from the group consisting of fatty alcohol polyethylene oxide condensates wherein the fatty alcohol is of about 10 to about 18 carbon atoms and the polyethylene oxide is of about 3 to about 15 moles of ethylene oxide per mole of higher fatty alcohol; about 30 to 60% by weight of exchanging zeolite aluminosilicate particles selected from a crystalline zeolite, amorphous zeolite, or a mixture of crystalline and amorphous zeolite, wherein the exchange rate and capacity of said zeolite are such that when about 375 ppm of said zeolite on an anhydrous basis is placed in water at 45° C. containing about 40 ppm dissolved calcium ion while vigorously stirring, the dissolved calcium ion content of the water is reduced to below about 8 ppm in about 5 minutes, and said zeolite particles having ultimate particle diameters in the range of from about 0.01 to about 20 microns; and about 4 to 12% by weight of a waxy quaternary ammonium compound softening agent, selected from the group consisting of soluble salts of quaternary ammonium compounds containing one or two long chain hydrophobic groups and two or three short chain groups; wherein,

a portion of said nonionic detergent is present in the interior of said nucleus particles,

said agent is present within and/or external to said nucleus particles, and

said zeolite particles and the remaining portion of said nonionic detergent are present as at least two coats on said nucleus particles, a coat being zeolite particles adhered to nonionic detergent, and the amounts of said nonionic detergent and zeolite particles which have been applied as recoatings being from about 5 to about 50% by weight of the total amounts of said nonionic detergent and zeolite particles present in the composition.

7. A method of making a free flowing, particulate detergent softener composition according to claim 1, which comprises:

mixing together said nucleus particles and liquid forms of said agent and a first amount of said nonionic detergent so that said agent and detergent are absorbed in and externally cover said nucleus particles producing covered nucleus particles,

admixing with said covered nucleus particles a first amount of zeolite particles which adhere to said agent and detergent covering said covered particles and produce zeolite and detergent coated particles, and

admixing with said zeolite and detergent coated particles, in sequence, at least another amount of said nonionic detergent and at least another amount of said zeolite to produce recoated particles, wherein

the additional amounts of said nonionic detergent and zeolite being applied as recoatings subsequent to application of said first amount of detergent and said first amount of zeolite particles are from about 5 to about 50% by weight of the total amounts of said nonionic detergent and zeolite particles used.

4,339,336

QUATERNARY AMMONIUM SUCCINIMIDE SALT COMPOSITION AND LUBRICATING OIL CONTAINING SAME

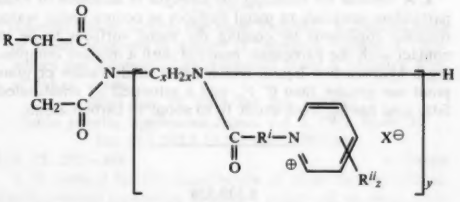
Kenneth G. Hammond, and Harry Chafetz, both of Poughkeepsie, N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 23, 1981, Ser. No. 246,513

Int. Cl.[3] **C10M** *1/32*

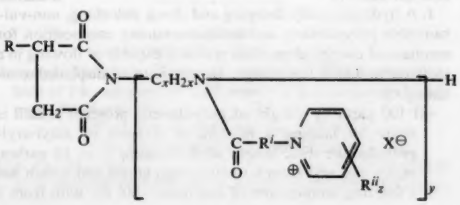
U.S. Cl. 252—34 **6 Claims**

1. A quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R^i is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R^{ii} is a hydrocarbyl radical having from 1 to 10 carbon atoms, x has a value of 2 or 3, y has a value from 1 to 5, z has a value of 0 to 5, and X is a halide radical.

4. A lubricating oil composition comprising a major portion of a mineral lubricating oil and a minor dispersant amount of a quaternary ammonium succinimide salt composition represented by the formula:



in which R is a hydrocarbyl radical having from 25 to 200 carbon atoms, R^{i} is a divalent hydrocarbon radical having from 1 to 10 carbon atoms, R^{ii} is a hydrocarbyl radical having from 1 to 10 carbon atoms, x has a value of 2 or 3, y has a value from 1 to 5, z has a value of 0 to 5, and X is a halide radical.

4,339,337

PROCESS FOR THE PREPARATION OF MAGNETIC BEADS OF VINYLAROMATIC POLYMERS

Marc Tricot, Andilly, and Jean-Claude Daniel, Fontenay sous Bois, both of France, assignors to Rhone-Poulenc Industries, Paris, France

Filed Aug. 15, 1980, Ser. No. 178,465

Claims priority, application France, Aug. 24, 1979, 79 21342; Jun. 27, 1980, 80 14309

Int. Cl.³ H01F *1/00, 1/28;* C08J *3/00*

U.S. Cl. 252—62.54 14 Claims

1. A process for the preparation of magnetic beads of vinylaromatic polymers in which vinylaromatic monomers alone or in admixture with a copolymerizable monomer is polymerized in the presence of an initiator, a suspension agent and a magnetic filler comprising dispersing the magnetic filler in an organic phase in the form of a solution of at least one water insoluble homo- or co-polymer in the monomer(s), suspending the dispersion in aqueous medium, and then polymerizing the monomer(s) while still containing the homo- or copolymer dissolved therein.

4,339,338

METHOD OF REDUCING THE STRENGTH OF ADHESION OF SOLID PARTICULATE MATERIALS TO METAL SURFACES

Robert J. Blake, Yorktown Heights; Joseph E. Sokolik, Jr., Carmel, and Samuel Sterman, Chappaqua, all of N.Y., assignors to Union Carbide Corporation

Filed Sep. 22, 1980, Ser. No. 189,630

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 14 Claims

1. A method for reducing the strength of adhesion of solid particulate materials to metal surfaces as occurs under water freezing conditions by coating the metal surfaces to be in contact with the particulate material with a mixture comprising a hydrocarbon liquid, which has a solidification or pour point not greater than 0° F., and a saturated or unsaturated fatty acid having from about 10 to about 18 carbon atoms.

4,339,339

HYDROSTATICALLY DAMPING AND SHOCK ABSORBING NON-VULCANIZABLE POLYSILOXANE AND BORON COMPOUND FOR MECHANICAL ENERGY ABSORPTION

Jeremi Maciejewski, A1. Niepodleglosci Str. 142/4/6, Warszawa, Poland

Continuation-in-part of Ser. No. 69,274, Aug. 24, 1979, which is a continuation-in-part of Ser. No. 904,499, May 10, 1978, abandoned. This application Feb. 24, 1981, Ser. No. 237,683

Claims priority, application Poland, May 10, 1977, 198004

Int. Cl.³ C08G *77/38, 77/44, 77/56;* F16F *9/30*

U.S. Cl. 252—75 6 Claims

1. A hydrostatically damping and shock absorbing, non-vulcanizable polysiloxane and boron-containing composition for mechanical energy absorption which is capable of flowing in a cylinder in which the plunger thereof is to be displaced, consisting of:

(a) 100 parts by weight of polysiloxane polymer which is made by heating a mixture of 3 mols of alkyl-aryl-polysiloxane diol, where alkyl contains 1 to 10 carbon atoms and aryl from 6 to 10 carbon atoms and which has a freezing temperature of less than −50° C., with from 1 to 50 moles of boron compounds selected from the group consisting of boric acid and ethyl borate added in the form of a solution in glycerine, which is partially evaporated during the reaction;

(b) from 01 to 200 parts by weight of fillers with a specific surface area of 10 to 400 m^2/g by BET method;

(c) from 0.01 to 300 parts by weight of pigment with a specific surface area not exceeding 200 m^2/g/BET/; and

(d) from 01 to 100 parts by weight of alkyl-alkyl-aryl-siloxane oils, where the alkyl contains 1 to 10 carbon atoms and the aryl 6 to 10 carbon atoms and having a viscosity of 1×10^4 to 2×10^6 cP at 25° C.

4,339,340

SURFACE-TREATING AGENT ADAPTED FOR INTERMEDIATE PRODUCTS OF A SEMICONDUCTOR DEVICE

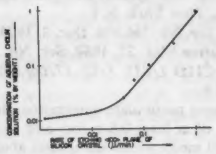
Hisashi Muraoka, Yokohama; Masafumi Asano, Yokosuka; Taizo Ohashi, Kanagawa, and Yuzo Shimazaki, Tokyo, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Division of Ser. No. 927,139, Jul. 21, 1978, Pat. No. 4,239,661, which is a division of Ser. No. 718,911, Aug. 30, 1976. This application Dec. 5, 1980, Ser. No. 213,317

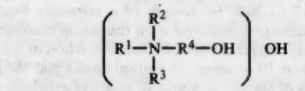
Claims priority, application Japan, Nov. 26, 1975, 50/140721; Nov. 26, 1975, 50/140722; Nov. 26, 1975, 50/140723; Nov. 26, 1975, 50/140724; Nov. 26, 1975, 50/140725; Nov. 26, 1975, 50/140726

Int. Cl.³ H01L *21/306;* B44C *1/22;* C03C *15/00;* C23F *1/00*

U.S. Cl. 252—79.5 34 Claims



1. A surface-treating agent adapted for intermediate products obtained in the manufacture of a semiconductor device, which comprises an aqueous solution containing 0.01 to 20% by weight of at least one trialkyl(hydroxyalkyl)ammonium hydroxide expressed by the formula:



where R^1, R^2 and R^3 are alkyl groups each having one to four carbons atoms, and R^4 is an alkylene group having two to four carbon atoms, and at least one additional ingredient selected from the group consisting of hydrogen peroxide, at least one complexing agent capable of forming a water-soluble complex with metals, at least one nonionic surfactant, and mixtures thereof.

4,339,341

PROCESS FOR AUGMENTING OR ENHANCING THE AROMA OF A DETERGENT USING 1-ETHOXY-1-ETHANOL ACETATE

Richard M. Boden, Monmouth Beach, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

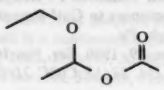
Division of Ser. No. 176,111, Aug. 7, 1980, Pat. No. 4,296,137. This application Jul. 6, 1981, Ser. No. 280,271

Int. Cl.³ C11D *3/50;* A23L *1/226*

U.S. Cl. 252—174.11 1 Claim

1. The process for augmenting or enhancing the aroma of a solid or liquid anionic, cationic, nonionic or zwitterionic detergent comprising the step of adding to a solid or liquid anionic,

cationic, nonionic or zwitterionic detergent base, an aroma augmenting, modifying or enhancing quantity of 1-ethoxy-1-ethanol acetate having the structure:



4,339,342

ANTI-FOAMING AGENTS, THE PREPARATION THEREOF, AND THEIR USE IN AQUEOUS SYSTEMS

Hans-Ulrich Hempel, Overath, and Edmund Schmadel, Leichlingen both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 3, 1981, Ser. No. 250,683

Claims priority, application Fed. Rep. of Germany, Apr. 5, 1980, 3013391

Int. Cl.[3] B01D *19/04;* C11D *3/12, 3/20*

U.S. Cl. 252—174.25 11 Claims

1. A method for preparing foam inhibitors for aqueous systems, which comprises the steps of:

(a) mixing a higher-molecular branched-chain primary alcohol of from about 18 to 30 carbon atoms with hydrophobic collodial silica in an alcohol to silica ratio of from about 100:2 to 100:20;

(b) heating the mixture from step (a) under stirring to temperatures of from about 100° to 240° C.; and

(c) allowing the heated mixture from step (b) to cool to room temperature.

8. A foam inhibitor prepared according to claim 1.

9. A method of regulating suds in aqueous detergent systems which comprises incorporating into the detergent an effective amount of a foam inhibitor of claim 8 before dilution to produce said aqueous detergent system.

4,339,343

NOVEL PROCESS AND PRODUCT

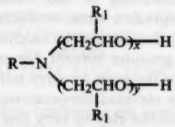
Charles E. Koehler, Baytown; Thomas R. McClellan, Seabrook, and Pat L. Murray, Houston, all of Tex., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 127,478, Mar. 5, 1980, Pat. No. 4,256,802, which is a continuation-in-part of Ser. No. 47,019, Jun. 11, 1979, abandoned. This application Nov. 3, 1980, Ser. No. 204,243

Int. Cl.[3] C09K *3/00*

U.S. Cl. 252—182 12 Claims

1. A polyol blend comprising (i) from about 20 percent to about 85 percent by weight of said blend of an amine diol, or mixture of amine diols selected from the formula



wherein R is an aliphatic radical having from 8 to 18 carbon atoms, inclusive, each R_1 is independently selected from the group consisting of hydrogen and methyl, x and y each independently have an average value between about 4 and about 15 inclusive; and (ii) from about 15 percent to about 80 percent by weight of a primary hydroxyl polyol characterized by a molecular weight of from about 60 to about 1000.

4,339,344

USE OF MIXTURE OF ALIPHATIC C_{10}-BRANCHED OLEFINS IN AUGMENTING OR ENHANCING THE AROMA OF PERFUMES AND/OR PERFUMED ARTICLES

Richard M. Boden, Monmouth Beach; Lambert Dekker, Wyckoff; Frederick L. Schmitt, Holmdel, all of N.J., and Augustinus G. Van Loveren, Rye, N.Y., assignors to International Flavors & Fragrances Inc., New York, N.Y.

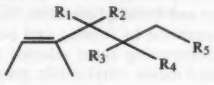
Division of Ser. No. 188,576, Sep. 18, 1980, Pat. No. 4,303,555, which is a continuation-in-part of Ser. No. 160,788, Jun. 19, 1980, Pat. No. 4,287,084. This application May 28, 1981, Ser. No. 267,047

The portion of the term of this patent subsequent to Sep. 1, 1998, has been disclaimed.

Int. Cl.[3] C11D *7/54, 3/395, 3/50*

U.S. Cl. 252—187.24 1 Claim

1. A process for augmenting or enhancing the aroma of a liquid bleach containing a hypochlorite ion comprising the step of adding to a hypochlorite ion containing bleach an aroma augmenting or enhancing quantity of one or more diisoamylene compositions produced by the step of reacting two moles of isoamylene in the presence of an acid catalyst, the resulting diisoamylene containing composition being defined according to the generic structure:



wherein R_1, R_2, R_3, R_4 and R_5 each represent hydrogen or methyl with the provisos that

(i) at least one of R_1 or R_4 represents methyl;

(ii) the sum of the carbon atoms in R_1, R_2, R_3, R_4 and R_5 is 3; and

(iii) R_1 and R_2 are each hydrogen when R_5 is methyl.

4,339,345

METHOD FOR MANUFACTURE OF NICKEL BORIDE COLLOID

Yukimichi Nakao, Tokyo, and Shoei Fujishige, Yokohama, both of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jun. 19, 1980, Ser. No. 160,921

Claims priority, application Japan, Jul. 3, 1979, 54-84726

Int. Cl.[3] B01J *13/00;* C07C *29/136*

U.S. Cl. 252—309 6 Claims

1. A method for the manufacture of nickel boride colloid, which method comprises causing a nickel salt to react upon one member selected from the group consisting of sodium borohydride and potassium borohydride in an alcohol substantially free from dissolved oxygen under a non-oxidative atmosphere in the presence of one member selected from the group consisting of poly(vinylpyrrolidone), poly(methyl vinyl ether), poly(2-hydroxyethyl acrylate, poly(tertbutyl methacrylate) and soluble nylon, and subsequently adding one member selected from the group consisting of soduim alcoholate, potassium alcoholate, sodium hydroxide, potassium hydroxide, tetrabutylammonium hydroxide and potassium carbonate to the resultant reaction mixture.

4,339,346

BITUMINOUS EMULSIONS

Johann G. D. Schulz, Pittsburgh, and John A. Cobler, Harwick, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jan. 9, 1980, Ser. No. 110,797

Int. Cl.[3] B01J *13/00;* C08L *95/00*

U.S. Cl. 252—311.5 16 Claims

1. A bituminous emulsion consisting essentially of bitumi-

nous material, water and the product resulting from the reaction of (1) polycyclic, polycarboxylic acids obtained as a result of the oxidation of coal with (2) a base, wherein the weight ratio of bituminous material to water is in the range of about 19:1 to about 1:6 and the weight ratio of said product to water is in the range of about 1:199 to about 1:3.

4,339,347

USE OF QUATERNIZED DERIVATIVES OF POLYMERIZED PYRIDINES AND QUINOLINES AS DEMULSIFIERS

Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Division of Ser. No. 32,044, Apr. 23, 1979, Pat. No. 4,297,484. This application Mar. 12, 1981, Ser. No. 242,857

Int. Cl.³ B01D *17/04*

U.S. Cl. 252—344 **12 Claims**

1. A process of demulsification which comprises treating an emulsion system with a quaternized derivative of polymerized pyridine or quinoline compounds, which compounds prior to polymerization are selected from the group consisting of pyridine, 2-methyl pyridine, 4-methyl pyridine, 4-phenyl pyridine, 4-ethyl pyridine, 2-hydroxypyridine, 2,4-lutidine, quinoline, 2-methyl quinoline and 4-methyl quinoline, the nitrogen atoms of which are quaternized by treating said polymerized compounds with a quaternizing agent selected from the group consisting of methyl iodide, ethyl iodide, propyl iodide, ethyl bromide, benzyl bromide, butyl bromide, dodecyl bromide, benzyl chloride, dodecyl benzyl chloride, ethyl bromoacetate, dimethyl sulfate, tetradecyl bromide, and octyl bromide.

4,339,348

DIOXIME ION EXCHANGERS

Ralph W. M. Lai, Lexington, and John K. Litchfield, Bedford, both of Mass., assignors to Kennecott Corporation, Stamford, Conn.

Division of Ser. No. 11,034, Feb. 9, 1979, Pat. No. 4,248,837. This application Apr. 17, 1980, Ser. No. 141,126

Int. Cl.³ B01F *1/00*

U.S. Cl. 252—364 **4 Claims**

1. An organic extractant solution comprising a dioxime selected from the group consisting of methyl hexyl dioxime and methyl octyl dioxime, said dioxime being dissolved in an essentially water-immiscible organic solvent, said organic solvent including over twenty percent by weight of a long chain alcohol, said dioxime comprising between one to fifteen percent by weight of the resulting solution.

4,339,349

CORROSION INHIBITORS FOR LIMITED OXYGEN SYSTEMS

Richard L. Martin, and Evelyn W. Purdy, both of St. Louis, Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Filed Feb. 11, 1980, Ser. No. 120,169

Int. Cl.³ C23F *11/16, 11/18, 11/14, 11/12*

U.S. Cl. 252—389 A **18 Claims**

1. Compositions useful as a corrosion inhibitor in limited oxygen aqueous system characterized by containing at least two of the following:

(1) sulfur-oxygen phosphates

(2) fatty quaternaries

(3) polyphosphate esters

(4) cyclic amidines

(5) trithiones.

4,339,350

CATALYST PREPARED FROM TUNGSTEN HEXAFLUORIDE AND WATER

John P. Pellegrini, Jr., O'Hara Township, Allegheny County; David L. Beach, and Thaddeus P. Kobylinski, both of Gibsonia, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Jun. 19, 1980, Ser. No. 160,959

Int. Cl.³ B01J *31/34, 27/12;* **C07C** *21/22;* **C10G** *69/12*

U.S. Cl. 252—429 R **8 Claims**

5. The catalyst comprising the reaction product of tungsten hexafluoride and water in a molar ratio of tungsten hexafluoride to water of between about 2:1 and about 20:1 in an inert liquid organic solvent selected from alkanes and cycloalkanes having between about 5 and about 60 carbon atoms and halogenated alkanes having from one to about 20 carbon atoms.

7. The catalyst in accordance with claim 5 in which the boiling point of said solvent at 760 mm Hg is between about 30° C. and about 500° C.

8. The catalyst in accordance with claim 5 in which said catalyst comprises between about 10 and about 50 weight percent of said solution.

4,339,351

PROCESS FOR PRODUCING OLEFIN POLYMERS

Kentaro Mashita, and Katsumi Hanji, both of Ibaraki, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 4, 1980, Ser. No. 213,029

Claims priority, application Japan, Dec. 18, 1979, 54-165341

Int. Cl.³ C08F *4/64, 4/68*

U.S. Cl. 252—429 B **13 Claims**

1. A catalyst component for polymerization of an olefin comprising a titanium compound and/or a vanadium compound supported on a solid product obtained by the reaction between a Grignard compound and a boron compound represented by the general formula $B(OR^1)_aR^2_bR^3_c$, wherein a, b and c are numbers defined by the formulas $0<a\leqq 3$, $0\leqq b<3$, $0\leqq c<3$ and $a+b+c=3$, R^1 represents a hydrocarbon radical having up to 20 carbon atoms, and R^2 and R^3, which may be the same or different, represent each a hydrogen atom, a hydrocarbon radical having up to 20 carbon atoms, or a halogen atom.

4,339,352

SORPTIVE CLAY COMPOSITION AND METHOD OF MANUFACTURE

Frank Pitts, Magalas, France; Jack A. Tiethof, South Plainfield, and Robert A. Burns, Long Valley, both of N.J., assignors to Engelhard Minerals & Chemicals Corporation, Menlo Park, N.J.

Filed Feb. 25, 1981, Ser. No. 238,272

Int. Cl.³ B01J *21/20*

U.S. Cl. 252—449 **12 Claims**

1. In a process for treating raw clay to produce a granular sorbent useful in absorbing oil and water and also having resistance to disintegration when contacted with water, by thermally activating the raw clay by calcination, the improvement whereby the granular sorbent possesses the aforementioned properties but the need to carry out the calcination of the raw clay at very elevated temperatures such as to reduce the volatile matter of the clay to very low values is avoided, said improvement comprising:

mixing the raw clay with an aqueous solution of alkali metal silicate before calcining the raw clay and carrying out the calcination at a temperature below a temperature normally required to thermally activate the raw clay and producing a thermally activated clay composition having a higher volatile matter content than that of clay calcined at the very elevated temperature.

4,339,353

CONVERSION PROCESS

Paul B. Weisz, Yardley, and Vincent J. Frilette, Morrisville, both of Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 266,186, Mar. 19, 1963, Pat. No. 3,594,311, which is a continuation-in-part of Ser. No. 161,242, Dec. 21, 1961, Pat. No. 3,508,867, which is a continuation-in-part of Ser. No. 343,489, Feb. 10, 1964, Pat. No. 3,140,252, which is a continuation-in-part of Ser. No. 754,915, Aug. 14, 1958, Pat. No. 3,140,322. This application Jul. 16, 1971, Ser. No. 163,458

The portion of the term of this patent subsequent to Jul. 20, 1988, has been disclaimed.

Int. Cl.[3] C10G *47/18*

U.S. Cl. 252—455 Z 2 Claims

1. A catalyst composition comprising a metallic hydrogenation component combined with a crystalline aluminosilicate zeolite having a pore size of about 5 Angstrom units and a silicon to aluminum ratio of at least 1.8, said aluminosilicate being dispersed, combined or otherwise intimately admixed with a porous matrix.

4,339,354

HYDROCARBON CONVERSION CATALYSTS

Elroy M. Gladrow, Sun City, Ariz.; William E. Winter, and William L. Schuette, both of Baton Rouge, La., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 10, 1980, Ser. No. 196,191

Int. Cl.[3] B01J *29/08*

U.S. Cl. 252—455 Z 11 Claims

1. A catalyst comprising:

(a) a crystalline aluminosilicate zeolite having uniform pore diameters ranging from about 6 to about 15 Angstroms, and a silica to alumina mole ratio of at least about 3;

(b) an inorganic oxide matrix, and

(c) discrete particles of alumina,

said zeolite prior to being composited with (b) having a unit cell size greater than about 24.5 Angstroms, and said catalyst having an alkali metal content such that the ratio of weight percent alkali metal, calculated as the alkali metal oxide, based on the total catalyst, divided by the weight percent zeolite based on the total catalyst is not greater than 0.024 and a rare earth metal content such that the ratio of weight percent rare earth metal, calculated as the rare earth metal oxide, based on the total catalyst, divided by the weight percent zeolite based on the total catalyst ranges from about 0.01 to about 0.08.

4,339,355

CATALYTIC OXIDE OF MOLYBDENUM, VANADIUM, NIOBIUM AND OPTIONAL 4TH METAL

Harry J. Decker, and Erlind M. Thorsteinson, both of Charleston, W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 621,088, Oct. 9, 1975, abandoned, which is a continuation-in-part of Ser. No. 505,780, Sep. 13, 1974, abandoned, which is a continuation-in-part of Ser. No. 408,419, Oct. 23, 1973, abandoned. This application Oct. 11, 1977, Ser. No. 841,056

Int. Cl.[3] B01J *23/22, 23/26, 23/28, 23/34*

U.S. Cl. 252—464 5 Claims

1. An oxidation catalyst containing the elements Mo, V, Nb and X, in the form of oxides, in the ratio

$$Mo_aV_bNb_cX_d$$

wherein X is at least one element selected from the group consisting of Cr, Cu, Mn and Y,

a is 12,

b is 0.1 to 20,

c is 0.1 to 12, and

d is 0 to 3.0

said catalyst being devoid of catalytically active forms of tellurium, phosphorus and oxides of silicon.

4,339,356

HEAVILY PERFUMED PARTICLES

David D. Whyte, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 31, 1980, Ser. No. 221,873

Int. Cl.[3] C11B *9/00;* A61K *7/46*

U.S. Cl. 252—522 A 12 Claims

1. Heavily perfumed particles having both immediate and long lasting perfume emitting properties, consisting essentially of from about 0.5% to about 40% water-insoluble perfume, from about 1.5% to about 20% of a water-soluble polymer which will dissolve in water at a temperature of less than 100° C., from about 0.01% to about 5% of an emulsifier, from about 10% to about 90% water, and from about 1.5% to about 75% by weight of a hydratable material, the amount of the hydratable material being sufficient to hold at least about 85% of the water is said particles when fully hydrated.

4,339,357

INTUMESCENT COMPOSITION

Richard R. Nicholson, Ann Arbor, Mich.; Ray E. Smith, Lake Buena Vista, Fla., and Jayendra G. Shukla, Ann Arbor, Mich., assignors to Great Lakes Chemical Corporation, West Lafayette, Ind.

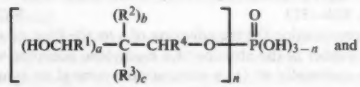
Division of Ser. No. 939,629, Sep. 5, 1978, Pat. No. 4,205,022. This application Sep. 17, 1979, Ser. No. 76,049

The portion of the term of this patent subsequent to Jul. 1, 1997, has been disclaimed.

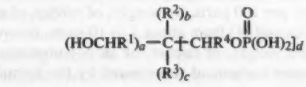
Int. Cl.[3] C09D *5/18*

U.S. Cl. 252—606 3 Claims

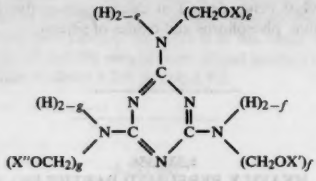
1. An intumescent composition consisting essentially of from about 8 to about 55 percent (by weight) of a compound selected from the group consisting of



and



wherein a, b, c, d, and n are integers; a is from 1 to 3; b and c are independently selected from the group consisting of 0 and 1; d and n are independently selected from the group consisting of 1 and 2; R^1 and R^4 are independently selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and haloalkyl of 1 to 4 carbon atoms and 1 to 2 halogen atoms; and R^2 and R^3 are independently selected from the group consisting of haloalkyl containing 1 to about 4 carbon atoms and 1 to about 2 halogen atoms selected from the group consisting of chlorine, bromine, and mixtures thereof, from about 20 to about 40 percent (by weight) of water and from about 10 to about 70 percent (by weight) of a cyclic nitrogen compound of the formula



wherein e, f, and g are integers selected from the group consisting of 1 and 2, e plus f plus g equal about 3 to 6, and X, X', and X" are independently selected from the group consisting of hydrogen and —CH_3.

4,339,358

PROCESS AND APPARATUS FOR RECLAIMING POLYURETHANES

Wilhelm Schütz, Josef-Ponten-Strasse 60, D-5100 Aachen, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,260

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951617

Int. Cl.[3] **C08J** *3/00, 11/04*

U.S. Cl. 521—49.5 **9 Claims**

1. In a process for the treatment of waste polyurethane particles by alcoholysis or acidolysis wherein said particles are treated with a solvent at a temperature in excess of 120° C., the improvement which comprises subjecting said particles to comminution at least at the beginning of said treatment at a reaction temperature below about 200° C. and continuing comminution during said treatment, said treatment being conducted in an inert atmosphere of a counter-current flow of a protective gas, whereby gas flushes through the reaction zone preventing oxidation and drawing off vapors and gasses formed during said treatment.

4,339,359

COMPOSITION FOR THE ADHESION OF RUBBER TO REINFORCING MATERIALS

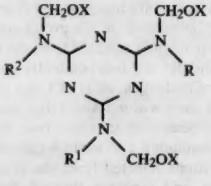
Rao S. Bezwada, Somerville, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 17, 1981, Ser. No. 235,340

Int. Cl.[3] **C08L** *7/00, 15/02;* **C08K** *3/30, 3/36*

U.S. Cl. 524—512 **5 Claims**

1. A composition for the adhesion of a textile fiber or a steel cord to rubber in the absence of a methylene acceptor which consists essentially of (1) a vulcanizable natural or synthetic rubber, (2) a sulfur vulcanizing agent, (3) from about 2 to 14 parts, by weight, per 100 parts, by weight, of rubber, of a high surface area silica and (4) from about 1 to 10 parts, by weight, per 100 parts, by weight, of rubber, of an N-(substituted oxymethyl)-melamine compound represented by the formula:



wherein each X represents, individually, hydrogen or a lower (C_1–C_8) alkyl radical; R, R_1, R_2 are, individually, hydrogen, a lower (C_1–C_8) alkyl radical, or the group —CH_2OX.

4,339,360

PARTICLES OF ACTIVATED OXIDIZED POLYSACCHARIDE SUBSTANCE COATED WITH INACTIVE PROTECTIVE LAYER AND METHOD FOR MANUFACTURE THEREOF

Toshimi Shimizu; Shoei Fujishige, and Akira Okada, all of Yokohama, Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 11, 1980, Ser. No. 129,335

Claims priority, application Japan, Mar. 31, 1979, 54/39226

Int. Cl.[3] **C08L** *1/08, 3/04;* **A61K** *9/36, 9/40*

U.S. Cl. 524—28 **11 Claims**

1. Particles of an active substance, each comprising:

a core formed of a high molecular weight substance containing at least one aldehyde group obtained by oxidizing a polysaccharide and an inactive protective coat formed of the reaction product of said high molecular weight substance with a high molecular weight substance containing active hydrogen containing hydroxyl or amino groups applied to the surface of the core.

11. Particles of an active substance, each comprising:

a core formed of a dialdehyde derivative of a polysaccharide prepared by oxidizing said polysaccharide consisting of molecular units which contain at least two adjacent hydroxyl groups and an inactive protective coat formed of the reaction product of said dialdehyde derivative with a high molecular weight substance containing active hydrogen atoms as hydroxyl or amino groups applied to the surface of the core.

4,339,361

PHENOL-FORMALDEHYDE RESINS EXTENDED WITH CARBOHYDRATES FOR USE IN BINDER COMPOSITIONS

Edwin J. MacPherson, Sarnia, and Daniel A. Frenette, Brights Grove, both of Canada, assignors to Fiberglas Canada, Inc., Toronto, Canada

Filed Jul. 28, 1980, Ser. No. 173,891

Int. Cl.[3] **C08L** *5/00;* **C08F** *4/44*

U.S. Cl. 527—303 **22 Claims**

1. In a method of preparing a water-dilutable, thermosetting, low free phenol-containing resole, said method comprising reacting phenol and formaldehyde to yield a phenol-formaldehyde product and reacting said product with an amide as an extender to form a phenol-formaldehyde-amide resin, which contains the maximum amount of amide permissible under given process conditions,

the improvement consisting of adding a sugar to a mixture of phenol and formaldehyde, or to phenol-formaldehyde resin, or to phenol-formaldehyde-amide resin in an aqueous basic medium to yield a resole having:

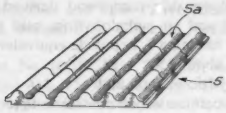
a phenol to formaldehyde molar ratio between 1:2.8 and 1:4.5, a phenol-formaldehyde to amide ratio of between 70:30 and 40:60 parts by weight; and a phenol-formaldehyde to amide plus sugar ratio of up to 35:65 parts by weight;

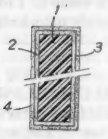
the amide compound being selected from the group consisting of urea, dicyandiamide, melamine and mixtures thereof and the sugar being selected from the group consisting of mono- and oligosaccharides and water-soluble polysaccharides.

4,339,362
HARDENING COMPOSITION CONTAINING CELLULOSE POWDER, LATEX, MAGNESITE AND MAGNESIUM CHLORIDE

Jean-Maurice Pascau, Bordeaux, France, assignor to Newco Synthetics International Inc., Toronto, Canada

Filed Jun. 29, 1979, Ser. No. 53,196
Claims priority, application France, Jul. 4, 1978, 78 19913
Int. Cl.³ C04B *9/14, 31/36;* C08L *1/00*
U.S. Cl. 524—5 **11 Claims**





1. A hardenable composition containing magnesite, finely moldable cellulose powder, magnesium chloride, water and at least 0.5% by dry extract weight latex of the acrylic type or of the natural or synthetic rubber type.

4,339,363
COMPOSITE MATERIAL COMPOSITIONS USING WASTEPAPER AND METHOD OF PRODUCING SAME

Yoshikazu Nakagima, Musashino, Japan, assignor to Kabushiki Kaisha Mikuni Seisakusho, Tokyo, Japan

Division of Ser. No. 54,685, Jul. 5, 1979, Pat. No. 4,279,790. This application Apr. 28, 1980, Ser. No. 144,302
Int. Cl.³ C08L *1/02*
U.S. Cl. 524—34 **6 Claims**

1. A method of producing a granular molding composition that provides substantially reduced linear shrinkage and excellent mechanical strength, comprising the steps of cutting wastepaper into pieces of a size less than 30 mm., stirring 100 parts by weight of the wastepaper at high speed in a mixer with about 70 to 150 parts by weight of the thermoplastic resin to drive off moisture from the wastepaper, and to melt the thermoplastic resin, continuing high speed stirring to beat and knead the cut wastepaper with the molten resin and thereby impregnate the cut wastepaper with the molten resin, and then granulating the composition.

4,339,364
WATER RESISTANT STARCH-BASED CORRUGATING ADHESIVE COMPOSITION

Paul L. Krankkala, Woodbury, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 30, 1980, Ser. No. 173,635
Int. Cl.³ C09J *3/06;* C08L *3/06, 3/08;* C09D *3/20*
U.S. Cl. 524—44 **13 Claims**

1. A water resistant, starch-based adhesive composition having a pH in the range from about 4.5 to about 7.0 consisting essentially of:

(a) water;

(b) corn or wheat starch;

(c) a carboxylated styrene-butadiene copolymer latex, said starch and latex being present in amounts sufficient to provide a starch to latex ratio, based on starch weight and latex solids weight, of between about 1:1 and about 4:1;

(d) a thickener; and

(e) a cross-linking agent.

4,339,365
COATING COMPOSITIONS CONTAINING PIGMENT DISPERSANTS

David Z. Becher, Allison Park; Roger M. Christenson; Richard L. Coalson, both of Gibsonia; Percy E. Pierce, Monroeville, and Karl F. Schimmel, Verona, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 59,715, Jul. 23, 1979, abandoned, which is a division of Ser. No. 938,746, Aug. 31, 1978, abandoned. This application Dec. 12, 1980, Ser. No. 215,765
Int. Cl.³ C08K *5/01, 5/02, 5/03;* C08L *1/00*
U.S. Cl. 523—400 **38 Claims**

1. A coating composition consisting essentially of:

(a) from about 25 percent to about 98 percent of a film-forming resin;

(b) from about 1 percent to about 70 percent of a pigment;

(c) from about 1 percent to about 50 percent of a dispersant capable of dispersing the pigment in liquid carrier (d) and film-forming resin (a), said dispersant being the polymerization product of a mixture of monomers consisting essentially of:

(i) from about 20 percent to about 85 percent of an alkyl methacrylate having from 3 to 8 carbon atoms in the alkyl group;

(ii) from about 5 percent to about 60 percent of a hardening monomer selected from the group consisting of a styrene, methyl methacrylate, ethyl methacrylate and mixtures thereof;

(iii) from about 1 percent to about 25 percent of an ethylenically unsaturated carboxylic acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, crotonic acid, maleic acid, fumaric acid, and mixtures thereof;

(iv) from about 1 percent to about 25 percent of a monomer having a double bond alpha-beta to a carbonyl group and at least one hydroxyl group selected from the group consisting of a monohydroxy alkyl acrylate, monohydroxy alkyl methacrylate, monohydroxy alkyl crotonate, monohydroxy alkyl fumarate, dihydroxy alkyl fumarate, monohydroxy alkyl itaconate, dihydroxy alkyl itaconate, monohydroxy alkyl maleate, dihydroxy alkyl maleate and mixtures thereof; and

(v) from about 0.1 percent to about 15 percent of a compound providing an amine functional moiety, said compound being an acrylic or methacrylic compound containing amino groups; and wherein said dispersant has a weight average molecular weight, determined by gel permeation chromatography, using a polystyrene standard, of from about 1,000 to about 10,000; and

(d) the balance a liquid carrier.

4,339,366

PROCESS FOR THE PRODUCTION OF POLYESTER RESINS

David H. Blount, 5450 Lea St., San Diego, Calif. 92105

Continuation-in-part of Ser. No. 207,391, Nov. 17, 1980, which is a continuation-in-part of Ser. No. 134,975, Mar. 30, 1980, which is a continuation-in-part of Ser. No. 13,139, Feb. 21, 1979, Pat. No. 4,226,982. This application Nov. 9, 1981, Ser. No. 319,144

Int. Cl.³ C08L *1/00*

U.S. Cl. 527—100 17 Claims

1. The process for the production of polyester resinous products by mixing, heating and reacting the following components:

(a) a broken-down alkali metal lignin-cellulose polymer and/or a broken-down cellulose polymer produced by mixing 3 parts by weight of a cellulose-containing plant or plant derivative with 2 to 5 parts by weight of melted alkali metal hydroxide, then heating the mixture at 150° C. to 220° C. while agitating for 5 to 60 minutes; in an amount of 10 to 50 parts by weight;

(b) a substituted organic hydroxy compound, which contains at least one substituent which will split off in the reaction, in an amount of 10 to 50 parts by weight;

(c) polycarboxylic acid or polycarboxylic acid anhydride, or mixtures thereof, in an amount of 10 to 50 parts by weight.

4,339,367

MODIFIED CYCLOPENTADIENE RESINS, PROCESS FOR PREPARING THE SAME, AND A COMPOSITION FOR PRINTING INK CONTAINING SAID MODIFIED RESINS AS VEHICLE COMPONENT

Yasuyoshi Chino, and Akinori Miyaguchi, both of Yokohama, Japan, assignors to Nippon Zeon Co., Ltd., Tokyo, Japan

Filed Dec. 18, 1980, Ser. No. 217,578

Claims priority, application Japan, Dec. 21, 1979, 54-166699; Feb. 6, 1980, 55-13405; Feb. 13, 1980, 55-16290

Int. Cl.³ C09D *3/72, 3/733, 11/10*

U.S. Cl. 525—131 15 Claims

1. A process for producing a modified resin, which comprises reacting (I) a hydroxyl-containing resin with (II) a polyisocyanate compound, said resin (I) being prepared by reacting (a) the reaction product of a cyclopentadiene resin, a higher fatty acid ester having a conjugated double bond and an α,β-unsaturated dicarboxylic acid anhydride with (b) a hydroxyl group-imparting agent.

4,339,368

CATIONIC COATING COMPOSITIONS CONTAINING NITROGEN HETEROCYCLIC MATERIALS

Ivan H. Tsou, Bloomfield Hills, and Marc L. Smith, Warren, both of Mich., assignors to Wyandotte Paint Products Company, Troy, Mich.

Division of Ser. No. 963,032, Nov. 22, 1978, Pat. No. 4,246,087, which is a continuation-in-part of Ser. No. 859,295, Dec. 12, 1977, Pat. No. 4,155,824. This application Feb. 14, 1980, Ser. No. 121,310

Int. Cl.³ C08L *63/10, 63/02*

U.S. Cl. 523—414 25 Claims

1. An aqueous corrosion resistant coating composition comprising a dispersion, solution or suspension of a coating composition, derived from an epoxy resin or an acrylic resin containing an oxirane group, either of which contains a tertiary nitrogen heterocyclic containing organic material solubilized by means of an acid, thereby forming a quaternary ammonium material, wherein the heterocyclic ring has from 8 to 8 members and from 1 to 3 nitrogen atoms, which resin contains no NCO groups, which when heat cured contains at least 75% less amine value than present in the material prior to curing.

4,339,369

CATIONIC EPOXIDE-AMINE REACTION PRODUCTS

Darrell D. Hicks, Jeffersontown, and David A. Shimp, Prospect, both of Ky., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 23, 1981, Ser. No. 256,747

Int. Cl.³ C08L *63/02*

U.S. Cl. 523—414 27 Claims

1. A process for preparing a resinous composition which comprises:

(A) reacting

(a) a polyepoxide compound derived from a dihydric phenol and an epihalohydrin, said polyepoxide compound having a 1,2-epoxide equivalent weight of about 110 to about 250;

(b) a dihydric phenol; and

(c) a monoamine which contains one tertiary amine group and one primary hydroxyl group at a temperature of about 25° C. to about 150° C. for a time sufficient to react all of the epoxide groups of the polyepoxide, wherein (a), (b) and (c) are reacted in the mole ratios of X moles of (b) to X+1 moles of (a) to Y moles of (c) wherein X has a value of 1 to 5 and Y is at least 8; and

(B) removing the excess monoamine by distillation.

4,339,370

HIGHLY FILLED CROSSLINKABLE EMULSION POLYMER COMPOSITION

Robert G. Parker, Irchester, England, assignor to Scott Bader Company Limited, Northamptonshire, England

Filed Feb. 25, 1981, Ser. No. 237,924

Claims priority, application United Kingdom, Mar. 3, 1980, 8007091

Int. Cl.³ C08L *3/26*

U.S. Cl. 524—424 9 Claims

1. An aqueous emulsion copolymer coating composition which contains (a) above about 70% by weight of the total weight of the composition of at least one inorganic filler component and (b) an aqueous emulsion of a copolymer containing at least one vinyl aromatic monomer, at least one acrylate monomer selected from acrylates and methacrylates and from one to 10% of an unsaturated organic acid, the composition being modified by the presence of (c) a zinc ammonium carbonate compound to give the composition improved retention of adhesive power in the face of attack by water and increased shelf-life.

4,339,371

HIGH CONCENTRATION WATER-SOLUBLE POLYMERS IN WATER-IN-OIL EMULSIONS

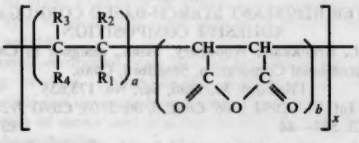
Peter M. Robinson, Milford; David H. Rakowitz, Cos Cob, and Lesley J. Nowakowski, Shelton, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 193,517, Oct. 2, 1980, abandoned. This application Mar. 20, 1981, Ser. No. 245,793

Int. Cl.³ C08L *33/00*

U.S. Cl. 524—310 26 Claims

1. A stable water-in-oil emulsion comprised of from about 40 to 60% by weight, based on the total weight of the emulsion, of a water-soluble polymer, and an oil-soluble, water-insoluble, polymeric surfactant, in an amount sufficient to stabilize the emulsion, said polymeric surfactant having the formula:



wherein x is a whole number greater than about 5, the mole ratio of a:b is from 3:1 to 1:3, provided the HLB number is maintained at less than about 14, R_1, R_2, R_3 and R_4 are independently selected from the group consisting of hydrogen, alkyl (C_1–C_{48}), alkoxy ($C_{1\text{-}48}$), alkenyl ($C_{2\text{-}48}$), aryl ($C_{6\text{-}12}$), alkaryl ($C_{7\text{-}12}$), and R_1, R_2, R_3, and R_4 are such that the surfactant is oil-soluble and water-insoluble.

4,339,372

PROCESS OF PREPARING STABILIZED POLYCHLOROPRENE LATEX

Paul Branlard, Grenoble, and Jean-Pierre Merle, Echirolles, both of France, assignors to Distugil, Neuilly sur Seine, France

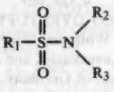
Continuation of Ser. No. 24,387, Mar. 27, 1979, abandoned. This application Aug. 11, 1980, Ser. No. 177,120

Claims priority, application France, Mar. 31, 1978, 78 09449

Int. Cl.³ C08K *5/44*

U.S. Cl. 524—169 **11 Claims**

1. A process of preparing a polychloroprene latex, which process comprises polymerizing chloroprene in an alkaline aqueous emulsion in the presence of an emulsifying system comprising from about 1.8 to 3 percent of rosin derivatives and from about 0.1 to 1 percent of a member selected from the class consisting of a fatty acid and an alkali salt of said acid, and a free radical catalyst, said emulsion also containing from about 0.2 to 4 parts by weight, per 100 parts of initial chloroprene monomer, of a sulfonamide which is water-insoluble, soluble in chloroprene, non-hydrolyzable in caustic soda, said sulfonamide being of the general formula:



in which:

R_1 represents a member selected from the group consisting of a C_3–C_{18} alkyl or alkenyl radical, an aryl radical, an arylalkyl radical, and an aryl or alkyl group bound by a heteroatom selected from the class consisting of oxygen, nitrogen, and sulfur, R_2 and R_3 represent a member selected from the class consisting of hydrogen, a C_1–C_{12} alkyl or alkenyl radical, an aryl radical, an arylalkyl radical, and an aryl or alkyl group bound by a heteroatom selected from the class consisting of oxygen, nitrogen, and sulfur, with the conditions that (1) if R_2═R_3═H the carbon in α-position of the —SO_2— group must be substituted by at least one group having a positive inductive effect, and (2) if R_2═H, R_3, being an alkyl group, must have at least two carbon atoms in the event that R_1 does not have groups with positive inductive effect on the carbon in α-position of the —SO_2— group of the amide.

4,339,373

GRANULATION AND DRYING AIDS FOR POLYMERIC GELS

Peter M. Robinson, Milford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Feb. 6, 1980, Ser. No. 119,232

Claims priority, application United Kingdom, Mar. 2, 1979, 7910668

Int. Cl.³ C08K *5/01*; C08J *3/12*

U.S. Cl. 524—521 **24 Claims**

1. A method of granulating solid polymeric gels containing solids in the amount of about 5 to 75 percent of said gel to form a free flowing powder comprising adding to said solid gel during the granulation an effective amount of an oil solution of a polymeric soap in the range of about 50 to 5000 ppm of polymeric soap based in the polymeric gel, which soap is a copolymer prepared from at least one hydrophobic monomer and at least one hydrophilic monomer.

4,339,374

NOVEL MOLDING COMPOSITION PROVIDING SHAPED ARTICLES OF IMPROVED STRENGTH AND HEAT AND AGE RESISTANCE

Armin Olschewski, Schweinfurt; Manfred Brandenstein, Eussenheim, and Heinrich Kunkel, Schweinfurt, all of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Fed. Rep. of Germany

Filed Nov. 28, 1980, Ser. No. 211,398

Int. Cl.³ C08L *77/00*

U.S. Cl. 524—606 **5 Claims**

1. A novel composition of matter capable of being molded to form a structural shape, and which comprises:

(a) from about 40 to about 60% thermoplastic resin as a matrix, said matrix having uniformly distributed therein;

(b) from about 5 to about 15% carbon fiber; and

(c) from about 15 to about 25% glass fiber;

all based on the total weight of said composition;

said composition, after molding and setting, having: improved

impact strength,

elastic deformability, and

aging resistance.

4,339,375

POLY(ESTER-AMIDE) CAPABLE OF FORMING AN ANISOTROPIC MELT PHASE DERIVED FROM P-HYDROXYBENZOIC ACID, 2,6-DIHYDROXYNAPHTHALENE, CARBOCYCLIC DICARBOXYLIC ACID, AROMATIC MONOMER CAPABLE OF FORMING AN AMIDE LINKAGE, AND, OPTIONALLY, ADDITIONAL AROMATIC DIOL

Gordon W. Calundann, N. Plainfield; Larry F. Charbonneau, Chatham, and Anthony J. East, Madison, all of N.J., assignors to Celanese Corporation, New York, N.Y.

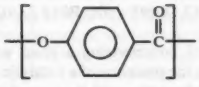
Filed Jun. 4, 1981, Ser. No. 270,439

Int. Cl.³ C08G *69/44*

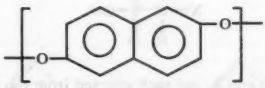
U.S. Cl. 524—602 **44 Claims**

1. A melt processable poly(ester-amide) capable of forming an anisotropic melt phase at a temperature below approximately 400° C. consisting essentially of recurring moieties I, II, III, IV, and, optionally, V wherein:

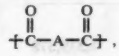
I is



II is



III is



where A is a divalent carbocyclic radical;

IV is —Y—Ar—Z—, where Ar is a divalent radical comprising at least one aromatic ring, Y is O, NH, or NR, and Z is NH or NR, where R is an alkyl group of 1 to 6 carbon atoms or an aryl group; and

V is —O—Ar′—O—, where Ar′ is a divalent radical comprising at least one aromatic ring, other than naphthylene, wherein at least some of the hydrogen atoms present upon the

rings optionally may be replaced by substitution selected from the group consisting of alkyl group of 1 to 4 carbon atoms, an alkoxy group of 1 to 4 carbon atoms, halogen, phenyl, and mixtures thereof, and wherein moiety I is present in a concentration within the range of approximately 20 to 80 mole percent, moiety II is present in a concentration within the range of approximately 5 to 30 mole percent, moiety III is present in a concentration within the range of approximately 10 to 40 mole percent, moiety IV is present in a concentration within the range of approximately 5 to 30 mole percent, and moiety V is present in a concentration within the range of approximately 0 to 20 mole percent, with the total molar concentration of moieties II, IV, and V being substantially equal to the molar concentration of moiety III.

4,339,376

HIGHLY HEAT-RESISTANT THERMOPLASTIC RESIN COMPOSITION HAVING HIGH OIL-RESISTANCE

Hideo Kasahara, Yokohama; Kunio Fukuda, Chigasaki, and Hiroshi Suzuki, Tokyo, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Filed Jul. 28, 1981, Ser. No. 287,685

Claims priority, application Japan, Aug. 13, 1980, 55/110360; Oct. 8, 1980, 55/139947

Int. Cl.³ C08L *71/04, 77/00*

U.S. Cl. 524—116 **24 Claims**

1. A thermoplastic resin composition having high oil-resistance which comprises

(a) polyphenylene ether resin,

(b) a copolymer comprising a vinyl aromatic compound and an α,β-unsaturated dicarboxylic acid anhydride as components, or a copolymer comprising a vinyl aromatic compound and an imide compound of an α,β-unsaturated dicarboxylic acid as components, and

(c) polyamide.

4,339,377

METHOD OF POLYMERIZING ROSIN

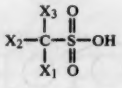
Samuel D. Hollis, Savannah, Ga., assignor to Union Camp Corporation, Wayne, N.J.

Filed Sep. 8, 1981, Ser. No. 300,164

Int. Cl.³ C09F *1/04;* **B01J** *31/02*

U.S. Cl. 260—99.5 **13 Claims**

1. The method of polymerizing a rosin which comprises heating said resin in the presence of a catalytic proportion of a compound selected from those of the formula:



wherein X_1, X_2 and X_3 are each selected from the group consisting of hydrogen and halogen, and at a temperature of from about 60° C. to about 180° C.

4,339,378

N-ACYLCARNOSINE ALUMINUM SALTS

Mitsuo Masaki, Chiba; Toru Yamanaka, Noda, and Taketoshi Kinoshita, Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

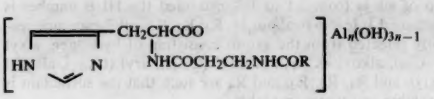
Filed Oct. 7, 1980, Ser. No. 194,841

Claims priority, application Japan, Oct. 31, 1979, 54-139966

Int. Cl.³ C07C *103/52;* **C07D** *233/64;* **A61K** *37/02, 31/415*

U.S. Cl. 260—112.5 R **5 Claims**

1. An N-acylcarnosine aluminum salt of the formula (I),



(I)

wherein R represents a lower alkyl group or a phenyl group,

4,339,379

N-ACRYLCARNOSINE ALUMINUM SALTS

Mitsuo Masaki, Chiba; Toru Yamanaka, Noda; Mitsuko Yoshioka, Kurihashi, and Kazuki Okai, Misato, all of Japan, assignors to Nippon Chemiphar Co., Ltd., Tokyo, Japan

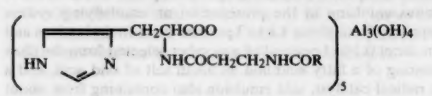
Filed Oct. 7, 1980, Ser. No. 194,844

Claims priority, application Japan, Dec. 26, 1979, 54-168274

Int. Cl.³ C07C *103/52;* **C07D** *233/64;* **A61K** *37/02, 31/415*

U.S. Cl. 260—112.5 R **3 Claims**

1. An N-acylcarnosine aluminum salt of the formula (I),



(I)

wherein R represents a lower alkyl group having 1 to 6 carbon atoms.

4,339,380

AZO DYESTUFFS

Herbert Hugl; Gerhard Wolfrum; Winfried Mennicke; Karl H. Schündehütte, all of Leverkusen, and Jochen Westphal, Duesseldorf, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

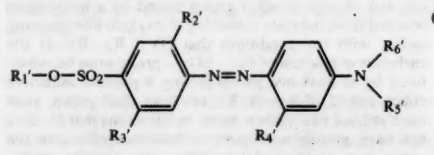
Filed Nov. 14, 1979, Ser. No. 93,946

Claims priority, application Fed. Rep. of Germany, Nov. 29, 1978, 2851575

Int. Cl.³ C09B *29/08, 29/26*

U.S. Cl. 260—207.1 **3 Claims**

1. A dyestuff, free from sulphonic acid and ammonium groups, of the formula



(III)

wherein

R_1' represents phenyl, which is optionally monosubstituted, disubstituted or trisubstituted by C_1–C_4-alkyl or halogen,

R_2' represents halogen, CN, CF_3, NO_2, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_3' represents halogen, CN, CF_3, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_4' represents —$NHCOQ_1'$, —$NHSO_2Q_1'$, —$NHCONH_2$, —$NHCONQ_1'Q_2'$, —$NHCOCF_3$, —$NHCOOQ_1'$ or —O—SO_2—Q_1',

and

R_5' and R_6', which may be identical or different, represent C_1–C_4-alkylene—O—CO—Q_1', C_1–C_4-alkylene—O—CO—O—Q_1', C_1–C_4-alkylene—$COOQ_1'$, C_1–C_4-alkylene—O—CO—NHQ_1', C_1–C_4-alkylene—O—SO_2—Q_1' or —CH_2CH_2—CN,

and wherein

Q_1' denotes C_1–C_4-alkyl, phenyl, chlorophenyl or tolyl and Q_2' denotes hydrogen or C_1–C_4-alkyl.

4,339,381

1,3-ALKYLENE-DIAZETIDINE-2,4-DIONES

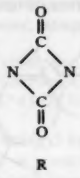
Reinhard H. Richter, North Haven; Benjamin W. Tucker, Bethany, and Henri Ulrich, Guilford, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 5, 1981, Ser. No. 231,876

Int. Cl.³ C07D *487/06, 487/08*

U.S. Cl. 260—239.3 B **7 Claims**

1. A compound having the formula:



R

wherein R is alkylene having from 8 to 18 carbon atoms in the chain.

4,339,382

PROCESS FOR MANUFACTURING N-ARYLTHIOCARBAMOYL-2-AMINO-1H-ISOINDOLE-1,3-(2H)DIONES

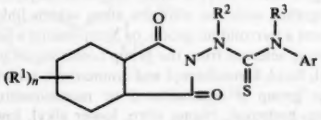
Joel L. Kirkpatrick, Washington Crossing, Pa., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Feb. 11, 1980, Ser. No. 115,528

Int. Cl.³ C07D *209/48*

U.S. Cl. 548—474 **4 Claims**

1. In the method of manufacturing compounds having the general structural formula:



(I)

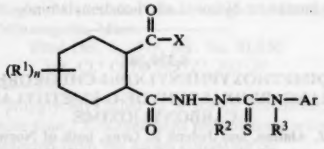
in which

R^1 is C_1 to C_4 alkyl or alkoxy, nitro, cyano or halo and n is zero or an integer from 1 to 4;

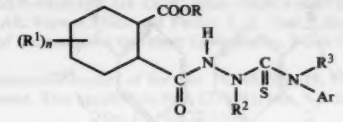
R^2 and R^3 are H or C_1 to C_4 alkyl or benzyl and

Ar is naphthyl, adamantyl, benzyl, alkyl, phenyl or phenyl bearing one or more substituents of the group C_1 to C_4 alkyl, C_1 to C_4 alkoxycarbonyl, bromo, chloro and trifluoromethyl

by ring closure of a compound having the corresponding structural formula



in which X represents a good leaving group, in which an electronegative atom is attached to the carbon atom of the carbonyl structure; the improvement comprising cyclization of a compound of the corresponding structural formula



in which R is C_1 to C_4 alkyl

by reaction under mildly basic conditions at a temperature below 50° C. in the presence of a non-reactive polar organic solvent and a hindered aliphatic amine.

4,339,383

IMIDE CONTAINING STABILIZERS FOR CHLORINATED THERMOPLASTICS

Wolfgang Wehner, Zwingenberg; Klaus-Peter Michaelis, Lindenfels/Odenwald, and Rainer Schneider, Bensheim-Auerbach, all of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

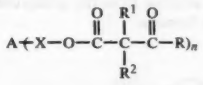
Filed Jul. 2, 1980, Ser. No. 165,304

Claims priority, application Switzerland, Nov. 7, 1979, 6477/79

Int. Cl.³ C07D *487/04, 403/12, 403/06, 209/48*

U.S. Cl. 548—419 **3 Claims**

1. A compound of the formula

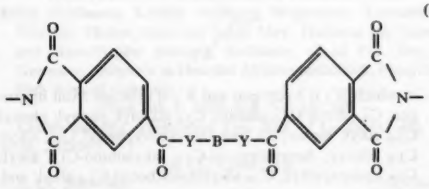


(I)

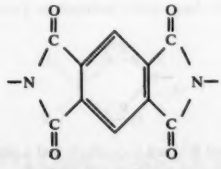
wherein n is an integer from 1 to 2, R is C_1–C_{24} alkyl or phenyl, each of R^1 and R^2 independently is hydrogen or R, and X is C_1–C_6 alkylene or C_2–C_6 alkylene having oxygen between any two adjacent carbon atoms and, if n is 1, A is

(II)

wherein Q is a group of —Z—CO, wherein the carbonyl group is attached to the nitrogen of the formula II, and Z is o-phenylene which can be substituted by a group —CON(R^6)R^7, —COOR^8 or —COSR^8, or by 4 halogen atoms, R^6 and R^7 are the same or different and are hydrogen or C_1–C_{12}-alkyl and R^8 is C_1–C_{12} alkyl, and, if n is 2, A is one of the groups of the formulae

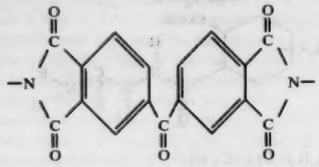


(VII)



(IX)

-continued



(XI)

wherein Y can be —O— or —NH—, B is C_1–C_6 alkylene, p-phenylene or one of the groups $[-CH_2-_qO]_r(CH_2-_q$ or $[(CH_2-_qS]_r(CH_2-_q$, wherein q is an integer from 1 to 4 and r is an integer from 1 to 3.

4,339,384

BENZOFURAN DERIVATIVES AND THEIR THERAPEUTIC APPLICATIONS

Jacques G. Maillard, Versailles, and Jacky Legeai, Palaiseau, both of France, assignors to Laboratoires Jacques Logeais, Issy-les-Moulineaux, France

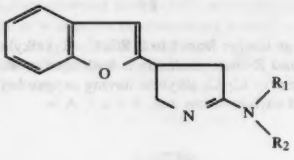
Filed Jul. 3, 1979, Ser. No. 54,626

Claims priority, application France, Jul. 17, 1978, 78 21188

Int. Cl.³ C07D *405/04*; A61K *31/40*

U.S. Cl. 548—525 **3 Claims**

1. A compound selected from the group consisting of compounds having the formula:



(I)

in which

is selected from:

a radical

in which R'_1 is hydrogen and R'_2 is selected from hydrogen; C_{1-6} alkyl; C_{2-6} alkenyl; C_{2-6} alkynyl; phenyl; phenyl C_{1-6} alkyl; mono-, di- and trimethoxyphenyl C_{1-6} alkyl; C_{1-6} alkoxy; benzyloxy; di-C_{1-6} alkylamino-C_{1-6} alkyl; C_{1-6} hydroxyalkyl; C_{1-6} alkyloxycarbonyl C_{1-6} alkyl; and a radical

in which R''_1 and R''_2 are C_{1-6} alkyl; and a pharmacologically acceptable acid addition salt thereof.

4,339,385

INDOLINOSPIROPYRANE COMPOUNDS

Peter Burri, Reinach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

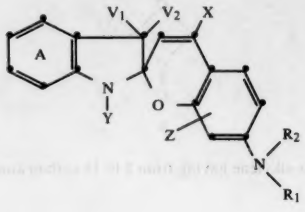
Division of Ser. No. 761,042, Jan. 21, 1977, Pat. No. 4,210,591. This application Jan. 4, 1980, Ser. No. 109,741

Claims priority, application Switzerland, Jan. 30, 1976, 1175/76; Sep. 7, 1976, 11326/76

Int. Cl.³ C07D *491/107*

U.S. Cl. 548—409 **13 Claims**

1. An indolinospiropyrane compound of the formula



(I)

wherein

R_1 and R_2, together with the nitrogen atom which links them, represent a pyrrolidino group,

X represents alkyl which has at most 12 carbon atoms and is unsubstituted or monosubstituted by halogen, or benzyl or phenyl which is unsubstituted or mono- or disubstituted by halogen, nitro, lower alkyl, lower alkoxy or the amino group

wherein T_1 and T_2 independently of one another represent hydrogen, lower alkyl or lower alkyl-carbonyl, or T_1 and T_2, together with the nitrogen atom which links them, represent a pyrrolidino group, or X represents a heterocyclic group selected from the group consisting of pyrrolyl, thienyl, furyl, benzothienyl and coumarinyl, which heterocyclic group is unsubstituted or monosubstituted by halogen, hydroxyl, cyano, nitro, lower alkyl, lower alkoxy or lower alkyl-carbonyl,

Y represents alkyl which has at most 12 carbon atoms, and is unsubstituted or monosubstituted by halogen, cyano or lower alkoxy, or benzyl which is unsubstituted or mono- or disubstituted by halogen, nitro, lower alkyl or lower alkoxy,

Z represents hydrogen, halogen or lower alkyl,

V_1 and V_2 each represent lower alkyl, cycloalkyl or benzyl, or conjointly represent alkylene of 4 to 5 carbon atoms, and the ring A is unsubstituted or monosubstituted by halogen, nitro, cyano, trifluoromethyl, lower alkyl, lower alkoxy, lower alkoxy-carbonyl, phenoxy, amino, lower alkylamino or N-lower alkyl-carbonylamino.

4,339,386

5-[(3,4-DIMETHOXYPHENYL)OR(4-CHLOROPHENYL)]-2-FURANCARBOXALDEHYDE-O-[(METHYLAMINO)-CARBONYL]OXIME

Robert J. Alaimo, and Joseph E. Gray, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Aug. 5, 1981, Ser. No. 290,409

Int. Cl.³ C07D *307/54*

U.S. Cl. 549—496 **2 Claims**

1. The compound 5-(3,4-dimethoxyphenyl)-2-furancarboxaldehyde-O-[(methylamino)carbonyl]oxime.

2. The compound 5-(4-chlorophenyl)-2-furancarboxaldehyde-O-[(methylamino)carbonyl]oxime.

4,339,387

PROCESS FOR MANUFACTURING 5-HYDROXYMETHYLFURFURAL

Guy Fleche, Merville; Antoine Gaset, Toulouse; Jean-Pierre Gorrichon, Toulouse; Eric Truchot, Toulouse, and Philippe Sicard, Lille, all of France, assignors to Roquette Freres, Lestrem, France

Filed Aug. 27, 1980, Ser. No. 181,744
Claims priority, application France, Sep. 5, 1979, 79 22251
Int. Cl.³ C07D *307/46*
U.S. Cl. 549—488 10 Claims

1. Process of manufacturing 5-hydroxymethylfurfural by decomposition of a hexose in a reaction medium comprising water and an organic solvent whose solubility in water is as low as possible, this solvent being selected from among those which are good solvents of HMF, at a temperature situated in the range of 70° to 95° C. in the presence of a solid catalytic support.

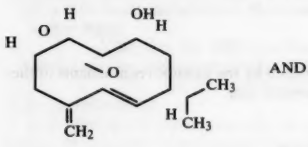
4,339,388

SYNTHESIS OF PERIPLANONE-B

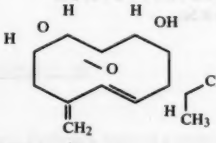
W. Clark Still, 560 Riverside Dr., New York, N.Y. 10027

Filed Apr. 22, 1980, Ser. No. 142,643
Int. Cl.³ C07D *493/10*
U.S. Cl. 549—332 3 Claims

1. An alcohol selected from the group consisting of



AND



4,339,389

POLYGLYCIDYL ETHERS

Edgar R. Rogier, Minnetonka, Minn., assignor to Henkel Corporation, Minneapolis, Minn.

Filed Oct. 4, 1979, Ser. No. 81,950
Int. Cl.³ C07D *303/27, 303/26*
U.S. Cl. 549—555 4 Claims

1. The polyglycidyl ether of a polyol containing on the average more than 1.5 oxirane units per molecule wherein said polyol is selected from the group consisting of:

$$H(CH_2)_hCH(CH_2OH)(CH_2)_kCH_2OH$$

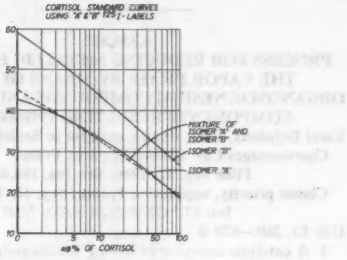
and mixtures thereof, wherein k is 3 or greater; and, h plus k are non-zero integers the sum of which is from 12 to 20.

4,339,390

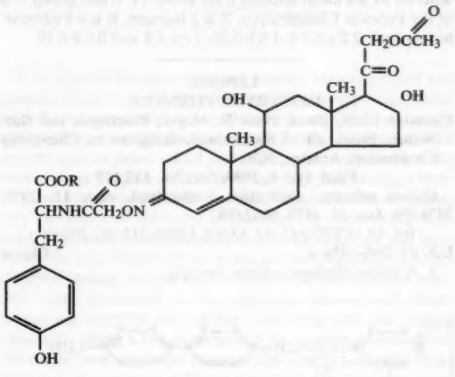
PREFERENTIAL IMMUNOREACTIVITY OF SYN-ISOMER OF CORTISOL DERIVATIVE

Akhtar Ali, Vernon Hills, and Paulus T. K. Tsui, Libertyville, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 76,648, Sep. 18, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,310
Int. Cl.³ C07J *5/00*
U.S. Cl. 260—397.45 4 Claims



1. The syn isomer of a cortisol derivative of the formula:



wherein R is selected from the group consisting of hydrogen, methyl and ethyl.

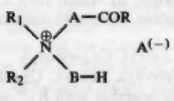
4,339,391

QUATERNARY AMMONIUM COMPOUNDS

Erich Hoffmann, Kriftel; Wolfgang Wagemann, Tremsbüttel; Günther Täuber, Koblenz; Adolf May, Hofheim am Taunus, and Hans-Walter Bücking, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

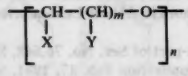
Filed Jul. 9, 1980, Ser. No. 167,202
Claims priority, application Fed. Rep. of Germany, Jul. 14, 1979, 2928603
Int. Cl.³ C09F *5/00*
U.S. Cl. 260—401 3 Claims

1. Quaternary ammonium compounds of the formula 1


(1)

in which R is C_8–C_{30}-alkyl or alkenyl; R_1 is alkyl, 2-hydroxyal-

kyl or alkenyl each having from 8 to 30 carbon atoms; R_2 is C_1–C_4-alkyl or benzyl; A is a group of the formulae



B is A or C_1–C_4-alkylene, X and Y are hydrogen or methyl with the proviso that X and Y are not simultaneously methyl; m is 1 or 2; n is a number of from 1 to 20; and $A^{(-)}$ is an anion.

4,339,392

PROCESS FOR REDUCING METALLIC HALIDES IN THE VAPOR PHASE BY MEANS OF SOLID ORGANOMAGNESIUM COMPOUNDS AND CATALYTIC COMPONENTS RESULTING THEREFROM

Karel Bujadoux, Lens, France, assignor to Societe Chimique des Charbonnages-CdF CHIMIE, Paris, France

Filed Sep. 12, 1980, Ser. No. 186,662

Claims priority, application France, Sep. 13, 1979, 79 22842

Int. Cl.³ C07F *7/28, 9/00, 7/00*

U.S. Cl. 260—429 R **11 Claims**

1. A catalytic component having the formula

$$(MX_a)\,(MgX_2)_b\,(RMgX)_c\,(HMgX)_d$$

wherein M is a metal selected from group IV B and group V B of the Periodic Classification, X is a halogen, R is a hydrocarbon radical, $2 \leqq a \leqq 3.5$, $1 \leqq b \leqq 30$, $1 < c \leqq 8$ and $0 \leqq d \leqq 10$.

4,339,393

DISTYRYLBIPHENYLS

Christian Lüthi, Basel; Hans R. Meyer, Binningen, and Kurt Weber, Basel, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

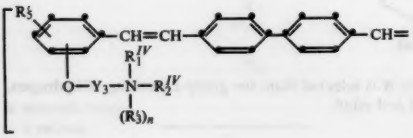
Filed Apr. 4, 1980, Ser. No. 137,147

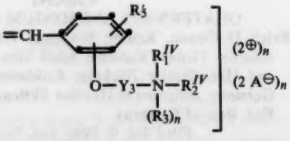
Claims priority, application Switzerland, Apr. 11, 1979, 3478/79; Jun. 26, 1979, 5952/79

Int. Cl.³ C07C *141/02, 93/02;* C07D *211/00, 207/06*

U.S. Cl. 260—459 A **5 Claims**

1. A distyrylbiphenyl of the formula





in which

Y_3 is C_2–$_4$-alkylene, or hydroxypropylene $R_1{}^{IV}$ is C_1–$_3$-alkyl, or together with $R_2{}^{IV}$ and the nitrogen to which they are attached is a pyrrolidine, piperidine, hexamethyleneimine or morpholine ring, $R_2{}^{IV}$ is C_1–$_3$-alkyl, or together with $R_1{}^{IV}$ and the nitrogen to which they are attached is a pyrrolidine, piperidine, hexamethyleneimine or morpholine ring,

R_3' is hydrogen, C_1–$_4$-alkyl, C_3–$_4$-alkenyl,

C_1–$_3$-alkoxycarbonylmethyl, benzyl, C_2–$_4$-hydroxyalkyl or C_2–$_4$-cyanoalkyl, or together with $R_1{}^{IV}$ and $R_2{}^{IV}$ and the nitrogen to which they are attached is a pyridine ring, R_5' is hydrogen, chlorine, C_1–$_4$-alkyl or C_1–$_3$-alkoxy, n is the number 0 or 1 and $A^{\ominus}$ is a colourless anion.

4,339,394

PROCESS OF AMMOXIDATION OF OLEFINS IN THE PRESENCE OF MULTIPLY PROMOTED SN-SB OXIDE CATALYSTS

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Macedonia; James F. Brazdil, Lyndhurst, and Frances I. Ratka, Cleveland Heights, all of Ohio, assignors to The Standard Oil Co., Cleveland, Ohio

Filed Oct. 1, 1980, Ser. No. 193,335

Int. Cl.³ C07C *120/14, 120/00, 121/32*

U.S. Cl. 260—465.3 **3 Claims**

1. In an ammoxidation process in which a reactant selected from the group consisting of propylene and isobutylene together with oxygen and ammonia in the vapor phase are contacted with a catalyst at elevated temperature and a pressure of 15 atmospheres or less to produce a nitrile, the improvement wherein said catalyst is a titanium-free tin antimonate oxide complex of the formula

$$A_aD_bFe_cTe_dSn_eSb_{12}O_x$$

wherein

A is Cu and at least one additional element selected from the group consisting of V, W and Mo;

D is Bi, Ge, Ce, La, Cr, Mn, Mg, Ca, Co, Ni, Nb, Ta, Ag, Zn, Cd, K, Cs, B, P and/or Eu;

wherein

a is 0.5 to 5,

b is 0 to 10,

c is 0.001 to 2,

d is 1.2 to 10,

e is 2.4 to 10,

x is a number determined by the valence requirements of the other elements present; and

wherein

$e > c+d$;

$f > a+b+c+d+e$; and

$e \geqq 5c$.

4,339,395

TREATMENT OF OLEFIN HYDROCYANATION PRODUCTS

Willie J. Barnette; Farland E. Henry, and Morris Rapoport, all of Orange, Tex., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 15, 1981, Ser. No. 254,487

Int. Cl.³ C07C *120/00, 121/20*

U.S. Cl. 260—465.8 R **4 Claims**

1. In a process for the production of dinitriles by the addition of hydrogen cyanide to nonconjugated, ethylenically unsaturated mononitriles having 4 to 20 carbon atoms in the presence of a zero-valent nickel catalyst promoted with an arylborane, wherein the reaction mixture thus obtained is contacted in the liquid phase with an aliphatic or alicyclic hydrocarbon after removal of sufficient mononitriles to permit the formation of two liquid phases, the improvement which comprises introducing at least about 150 ppm by weight of essentially water-free ammonia into the reaction mixture before contacting it with said hydrocarbon.

4,339,396

PROCESS FOR THE PREPARATION OF NAPHTHALENESULPHONYL CHLORIDE

Günter Rauchschwalbe, Cologne; Karl Mannes, and Dietmar Mayer, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 26, 1980, Ser. No. 163,357

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1979, 2928744

Int. Cl.³ C07C *143/30*

U.S. Cl. 260—543 R 11 Claims

1. In a process for the preparation of a naphthalenesulphonyl chloride by reacting an alkali metal salt or ammonium salt of a naphthalenesulphonic acid with thionyl chloride in the presence of a catalytically active substance the improvement wherein the reaction is carried out in the presence of an optionally substituted pyridine, tertiary aliphatic amine, secondary amidine and/or quaternary ammonium salt, which is present in an amount of 0.5 to 10% by weight, based upon the weight of the alkali metal or ammonium salt of naphthalenesulphonic acid.

4,339,397

METHOD FOR THE PREPARATION OF A SODIUM SALT OF 1-ALKYNE COMPOUND

Toshinobu Ishihara; Kenichi Taguchi, and Akira Yamamoto, all of Joetsu, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

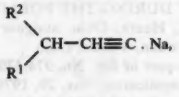
Filed Nov. 21, 1980, Ser. No. 209,266

Claims priority, application Japan, Nov. 26, 1979, 54-152819

Int. Cl.³ C07F *1/04*

U.S. Cl. 260—665 R 4 Claims

1. A method for the preparation of a sodium salt of a 1-alkyne represented by the general formula

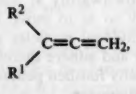


in which R^1 and R^2 each denote a hydrogen atom or a monovalent hydrocarbon group free from aliphatic unsaturation, which comprises the steps of:

(a) adding metallic sodium to an inert organic solvent,

(b) heating the metallic sodium in the inert organic solvent at a temperature higher than the melting point of the metallic sodium with agitation to form a dispersion of the molten metallic sodium in a finely divided form having a particle diameter not exceeding 500 μm, and

(c) admixing a 1,2-alkadiene represented by the general formula



in which R^1 and R^2 each have the same meaning as defined above, with the dispersion of the molten metallic sodium in the inert organic solvent.

4,339,398

COLUMN FOR HEAT AND MASS TRANSFER

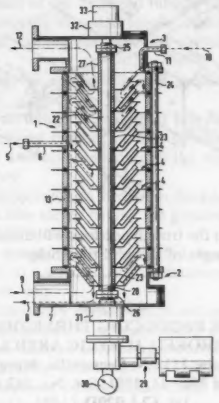
Vaclav Feres, Haid- und Neu-Strasse 14, 7500 Karlsruhe 1, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,969

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2951689

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—89 6 Claims



1. A column for heat and mass transfer between liquid and gaseous phases comprising a column and exchange stage plates spaced one above another in said column, each exchange stage plate having an outer fixed ring part fixedly attached to said column and an inner wheel part rotationally supported at the center of the column, said outer fixed ring part having a horizontal section connected to a wall of the column and extending into the inside of the column therefrom as well as a downwardly directed conical section connected inside of said horizontal section, and said inner wheel part having a downwardly directed conical section with a substantially horizontal overflow edge connected to the periphery thereof and blades which are directed toward the fixed ring part and extend outwardly along a lower surface of the conical section of the wheel part over the radial extent of the conical part of the fixed ring part in a manner defining a narrow gap between lower edges of the blades and the conical section of the fixed ring part, whereby fluid running downward, from a feeding point of the column, over the fixed ring part is distributed outwardly in a thin film without damming up and upward entrainment by gaseous phases.

4,339,399

GAS-LIQUID CONTACT APPARATUS

Dale E. Nutter, 7935 S. New Haven St., Tulsa, Okla. 74136

Filed May 27, 1981, Ser. No. 267,494

Int. Cl.³ B01F *3/04*

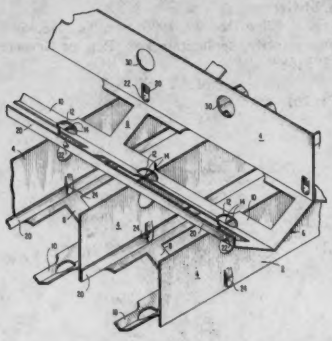
U.S. Cl. 261—112 28 Claims

1. Gas liquid contact apparatus comprising a plurality of grids arranged in a vertical stack,

each grid having a plurality of parallel elongated upstanding flanges, a plurality of trough portions which lie between said flanges and extend parallel to said flanges, and a plurality of gas openings which are located between the trough portions and the flanges to permit an ascending stream of gas to flow over and in contact with a film of liquid which is disposed on the upstanding flanges,

said trough portions each lying in contact with the upper edges of a plurality of flanges of a grid therebelow, said

trough portions having liquid drain openings located where they contact the flanges of a grid therebelow so



that liquid in the trough portions will drain gravitationally onto the flanges of the grid therebelow.

4,339,400

PROCESS FOR PRODUCING THREE-DIMENSIONAL, MIRRORED ACRYLIC ARTICLES

Paul A. Sorko-Ram, 1111 N. Centerville, Sturgis, Mich. 49001

Filed May 11, 1981, Ser. No. 262,234
Int. Cl.³ B29D *11/00*
U.S. Cl. 264—1.9 **11 Claims**

1. A process for producing a three-dimensional thermoplastic object having a mirror-like reflective finish, comprising the steps of:

(A) heating a sheet of thermoplastic material to a temperature sufficient to form said sheet but less than the melting temperature of said sheet;

(B) then, cooling said sheet substantially to room temperature;

(C) then, depositing a layer of reflective metal on the surface of said sheet;

(D) then, heating said sheet to a temperature sufficient to form said sheet; and,

(E) then, forming said sheet into the shape of said three-dimensional object.

4,339,401

PROCESS FOR PRODUCING METAL POWDERS HAVING LOW OXYGEN CONTENT

Ian S. R. Clark, Greenwood Lake, N.Y., and Benjamin J. Baltrukovicz, Oak Ridge, N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 749,113, Dec. 9, 1976, Pat. No. 4,080,126. This application Dec. 5, 1977, Ser. No. 857,315
Int. Cl.³ B01J *2/06*
U.S. Cl. 264—11 **1 Claim**

1. A gravity assisted, low turbulent process for producing metal powders having low oxygen content, the process comprising:

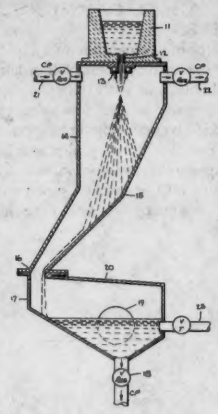
(A) introducing a downwardly flowing molten metallic stream through the upper portion of a vertically oriented atomization vessel,

(B) impacting the stream with downwardly flowing pressurized water to atomize the stream in the upper portion of the vessel to form metal droplets, which are quenched to form a powder with the and water forming a downwardly flowing slurry,

(C) conducting the atomization in an inert gaseous atmosphere,

(D) impacting the slurry against a canted deflector surface disposed beneath the upper portion of the vessel to free at least a portion of the entrained inert gas from the slurry and return the gas to the atmosphere,

(E) routing the slurry to flow down the deflector surface in a gently curving path to an exit aperture disposed in the lower portion of the vessel, the exit aperture offset from the vertical centerline of the molten stream to reduce slurry turbulence and splashback, the exit aperture opening into a closed degassing vessel disposed below the atomization vessel,



(F) introducing the flowing slurry into a substantially quiescent pool of slurry located within the degassing vessel to return substantially all of the remaining entrained gas from the slurry to the atmosphere,

(G) maintaining the slurry in the degassing vessel in a substantially quiescent state to foster inert gas bubble formation in the slurry disposed in the degassing vessel so as to provide a positive pressure of inert gas within the atomization vessel and the degassing vessel,

(H) drawing off the resulting degassed slurry, and

(I) separating the metal powder from the slurry.

4,339,402

BATCH PELLETIZING: A MEANS FOR MEASURING PELLET SIZE DURING THE FORMING PROCESS

Richard K. Henry, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 974,470, Dec. 29, 1978, abandoned. This application Nov. 29, 1979, Ser. No. 95,268
Int. Cl.³ B01J *2/14*
U.S. Cl. 264—40.1 **9 Claims**

1. A method of pelletizing particulate batch material for use in a glass melting furnace, the method comprising the steps of:

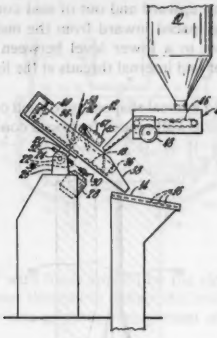
a. supplying particulate batch material having an average particle diameter of 110–120 microns and which contains on a theoretical oxide basis between 10–20 percent by weight of Na_2O, to a slanted rotatable surface;

b. supplying liquid to the slanted rotatable surface to render the batch particles with the ability to adhere to one another upon impaction;

c. rotating the slanted rotatable surface in a given direction to cause the material on the surface to move up along the surface and then downwardly at least partially under the influence of gravity so as to move in generally elliptical paths, whereby individual particles are caused to impact against one another and adhere thereto to form pellets, the size of the substantially finished pellets being in the range of ¾ inch to ¾ inch in diameter;

d. sensing the diameter of substantially finished pellets at a downward portion of an elliptical path by placing a sensor in a position above the slanted rotatable disc determined by

measuring the shortest distance from the edge of the pelletizer to the center of the elliptical path progressed by substantially finished pellets and then measuring this distance toward the center of the pelletizer and placing the sensor in this position such that it intercepts the downward elliptical



path of the pellets as they fall due to gravity against the motion of the upward moving rotating surface; and

e. changing the ratio of liquid to batch supplied to the slanted rotatable surface in response to a change in the diameter of the substantially finished pellets which are sensed.

4,339,403

METHOD OF CONTROLLING THE FILM THICKNESS AT A BLOWN FILM EXTRUDER INSTALLATION

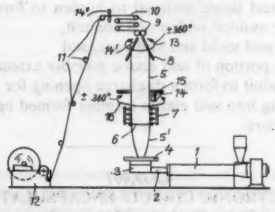
Hartmut Upmeier; Gerd Klinge, and Gerhard Winkler, all of Lengerich, Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 21, 1980, Ser. No. 209,060

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1979, 2947293

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—40.1 **12 Claims**



1. A method of controlling the film thickness at a blown film extruder installation, the installation comprising a nozzle ring divided into correcting sectors provided with setting elements for extruding tubular film, a film calibrating device, and a take-off and coiling apparatus for the film, said method comprising measuring film thicknesses over the film circumference at a location spaced from the nozzle ring; establishing a number of film sectors of equal cross-sectional area corresponding to the number of correcting sectors from the film thicknesses measured over the film circumference; determining a film sector of maximum or minimum thickness and assuming such film sector has been extruded in a predetermined position with respect to the nozzle ring for determining the associated correcting sector at the nozzle ring; successively allocating adjacent film thicknesses of equal cross-sectional area to subsequent correcting sectors; influencing the respective correcting sectors at the nozzle ring until the circumferential lengths of the film sectors of equal cross-sectional area are equal.

11. A blown film extruder installation comprising:

a nozzle ring for extruding tubular film divided into correcting sectors;

means for influencing each of the correcting sectors to thereby vary the thickness of extruded tubular filing;

calibrating means spaced from said nozzle ring for calibrating the width of the extruded tubular film;

measuring means for measuring film thicknesses over the circumference of the extruded tubular film;

means for removing extruded tubular film from said nozzle ring and for coiling the removed extruded tubular film; and

control means for controlling said means for influencing comprising:

means for dividing the measured film thicknesses into a predetermined number of film sectors of equal cross-sectional area corresponding to the number of correcting sectors;

means for determining a mean film thickness and for determining a film sector having the greatest deviation from the mean film thickness;

means for assigning the film sector having the greatest deviation to a selected one of the correcting sectors of the nozzle ring;

means for successively allocating film sectors adjacent to the assigned film sector to corresponding correcting sectors adjacent the selected correcting sector; and

means for actuating said means for influencing to thereby vary the thickness of extruded tubular film until the circumferential lengths of the sectors of equal cross-sectional area are equal.

4,339,404

METHOD OF CONTROLLING THE FILM THICKNESS AT A BLOWN FILM INSTALLATION

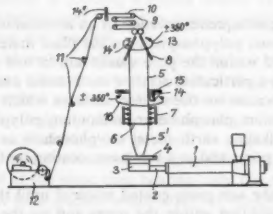
Hartmut Upmeier; Gerd Klinge, and Gerhard Winkler, all of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmöller & Hölscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,733

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1980, 3002903

Int. Cl.³ B29D *23/04*

U.S. Cl. 264—40.1 **10 Claims**



1. A method of controlling the film thickness at a blown film extruder installation, the installation comprising a nozzle ring for extruding film divided into cooling sectors provided with setting elements, a film calibrating device, and a take-off and coiling apparatus for the film, said method comprising:

measuring thicknesses over the circumference of the extruded film;

forming film sectors of equal circumferential length corresponding to the number of cooling sectors and assigning the film sectors to respective ones of the cooling sectors;

assigning the individual measured thicknesses to the film sectors and determining mean thickness distributions (s'_x) for the individual film sectors, the values of the mean

thickness distributions (s'_x) defining a measure for correcting commands for the setting elements of the cooling sectors that are associated with the respective film sectors;

selecting one of the mean thickness distributions of one of the film sectors as a reference value ($s'_{x\,max}$); and

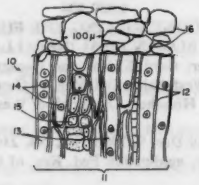
simultaneously generating correcting commands that influence the cooling sectors associated with remaining ones of the film sectors so that the values of the mean thickness distributions of the remaining film sectors approach the reference value to thereby obtain uniform thickness of the extruded film, the size of the correcting commands being so related to the film sector having the selected reference value that the cooling sector associated therewith receives no correcting command and the correcting commands of the other cooling sectors are formed by the respective departure (Δs_x) of the mean thickness distribution of the associated film sectors from the extreme reference value of the mean thickness distribution ($\Delta s_x = s'_{x\,max} - s'_x$), and that by reason of the correcting commands and according to the departure (Δs_x), the cooling sectors are cooled when the reference value is a maximum thickness and the cooling sectors are heated when the reference value is a minimum thickness.

4,339,405

METHOD OF ADHERING MINERAL DEPOSIT IN WOOD FRAGMENT SURFACES

Laszlo Paszner, 3906 W. 33rd Ave., Vancouver, B.C., Canada V6N 2H8

Filed Mar. 20, 1979, Ser. No. 21,775
Claims priority, application Canada, Mar. 20, 1978, 299288
Int. Cl.³ B29D *3/02*
U.S. Cl. 264—108 **44 Claims**



1. The method of making a molded composite product including a ligneus plant material with surfaces having internal pore spaces which is bonded with a mineral binder which comprises:

(a) providing an aqueous solution of an ammonium phosphate or ammonium polyphosphate on the plant material so as to be absorbed within the pore spaces and to wet the surfaces along with a particulate alkaline earth metal oxide, hydroxide or carbonate on the wetted surfaces which reacts with the ammonium phosphate or ammonium polyphosphate to form an alkaline earth metal oxyphosphate as the binder within the pores and as a wet paste coating on the surfaces; and

(b) molding the wet paste coated material until the oxyphosphate is solidified within the pores and on the surfaces to form the composite product.

4,339,406

PROCESS OF FORMING A NOZZLE

Gene E. Underwood, Casper, Wyo., assignor to 3U Partners, Casper, Wyo.

Division of Ser. No. 15,292, Feb. 26, 1979, Pat. No. 4,241,878. This application Sep. 22, 1980, Ser. No. 189,216
Int. Cl.³ B29D *1/00, 3/00*; B29C *1/14*
U.S. Cl. 264—154 **4 Claims**

1. A process of forming a nozzle for discharging a fluid; comprising the steps of:

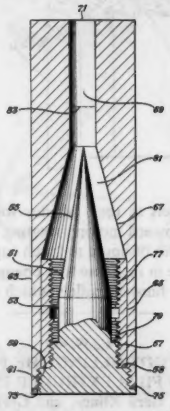
locating in an upright position a tubular conduit having an opening formed therethrough and having internal threads formed on the inside thereof at opposite ends,

said internal threads formed on the inside of said conduit at said opposite ends being threaded in opposite directions respectively,

locating within said conduit a core having a conical shaped end extending upward and out of said conduit,

said core being spaced inward from the inside wall of said conduit down to a lower level between the upper and lower ends of said internal threads at the lower end of said conduit,

surrounding said conical shaped end of said core with a mold having its inside wall spaced from said conical shaped end,



filling the space between the inside wall of said conduit and the core with a liquid material starting with said lower level and extending upward to the top of said conduit,

filling the space between said conical shaped end of said core and the inside wall of said mold with said liquid material up to a level above the top of said core,

said liquid material being characterized such that when it hardens it becomes elastic,

allowing said liquid material to harden to form an elastic member molded within said conduit,

removing said mold and said core, and

severing a portion of said elastic member extending beyond said conduit to form a discharge opening for the aperture extending into said elastic member formed upon removal of said core.

4,339,407

ELECTRONIC CIRCUIT ENCAPSULATION

Robert D. Leighton, Brockton, Mass., assignor to Alden Research Foundation, Brockton, Mass.

Filed Oct. 2, 1980, Ser. No. 192,950
Int. Cl.³ B29C *6/02*
U.S. Cl. 264—229 **7 Claims**

1. A support for holding an electrical component during encapsulation in a mold, the support comprising:

a mold;

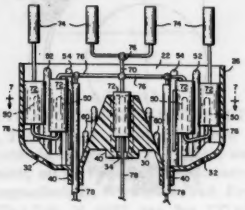
a carrier having opposed walls at least one of which is flexible toward the other; and

means on the opposed walls for engaging opposite sides of a component therebetween and locating the component relative to the opposed walls, the engaging means on respective opposed walls cooperatively gripping the component with force applied by wall flexure, and means for interengagement between the carrier and mold for deflecting the carrier wall to apply said gripping force on the component.

6. The method of encapsulating an electrical component comprising:

inserting the component in a carrier between opposed carrier walls;

enclosing the carrier in a mold and engaging the exterior of the carrier with the mold thereby deflecting the walls of



the carrier with force applied by the closing of the mold on the carrier thereby to deflect the inside of the walls of the carrier into gripping engagement of the component; and

injecting encapsulant into the mold while the component is so gripped against movement by flow of the encapsulant.

4,339,408

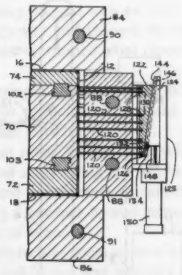
METHOD FOR MOLDING STRAIGHT RIBBED ARTICLES

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Nov. 3, 1980, Ser. No. 203,014

Int. Cl.³ B29F *1/14*

U.S. Cl. 264—328.7 **3 Claims**



1. A method of manufacturing a plastic article having at least one substantially planar wall portion with at least one integrally molded rib portion extending from the wall portion, said method comprising the steps of:

positioning mold means, comprising a plurality of mold cavity forming members, in a closed position to define a mold cavity corresponding to the configuration of the plastic article, said cavity including a rib forming portion, the rib forming portion including a main rib forming portion and a plurality of embossment forming portions extending from and distributed at spaced intervals along the length of the main rib forming portion, and having a plurality of pins spaced along its length in alignment with the embossment forming portions for axial movement substantially in the plane of the rib;

injecting molten thermoplastic material under pressure into the mold defining cavity;

cooling said thermoplastic material for a predetermined period of time;

simultaneously injecting a predetermined volume of thermoplastic material from the embossment forming portions into the main rib forming portion of the mold cavity by moving the pins in an injecting direction toward the rib portion a first predetermined distance corresponding to the volume of plastic to be injected; and

ejecting the article by displacing the plurality of mold cavity defining members from their closed position and exerting a pressure on the rib portion of the article at the plurality of embossment portions formed along the rib portion by moving the pins a second predetermined distance in the injection direction thereby forcing the rib portion from the rib forming portion of the mold cavity as the mold cavity defining members move from the closed position.

4,339,409

METHOD OF FORMING BLOWN POLYETHYLENE TEREPHTHALATE CONTAINERS

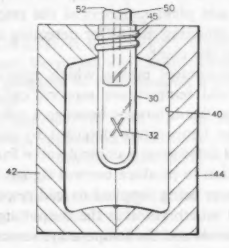
Nicholas J. Curto, Monroe, Mich., assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 26, 1981, Ser. No. 228,652

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ B29C *17/07*

U.S. Cl. 264—509 **5 Claims**



1. In a method of forming a blown hollow shape of poly(ethylene terephthalate) having an exterior opaque embossed surface design, the steps of:

forming a blowable preform of poly(ethylene terephthalate) having an exterior embossed surface design defined by adjacent thick and thin wall portions destined to form the embossed design in the blown container;

thermally conditioning the preform to a temperature in a range where the material is susceptible to strain hardening, and at the same time heating only the raised design portions to a higher temperature at which said raised portions of the preform crystallize and thus becomes opaque;

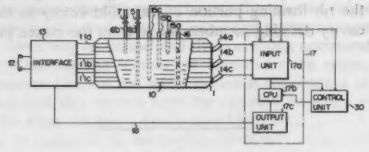
enclosing the blowable preform within a blow mold cavity having a smooth wall portion;

introducing blow fluid under pressure into the interior of the preform and thereby (1) expanding the preform outwardly to conform to said cavity, including contacting both the thick and thin wall portions with said blow mold cavity smooth wall portion, (2) strain hardening the preform, and (3), proportionately expanding said thick and thin wall portions; and thereafter venting fluid under pressure from the interior of said blown shape to allow removal from the mold of a transparent, hollow blown shape having said exterior opaque embossed surface design.

4,339,410
CONTROL FOR LIQUID PLANT

Takahisa Satou, Tokorozawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Continuation of Ser. No. 862,275, Dec. 19, 1977, abandoned.
This application May 12, 1980, Ser. No. 148,993
Claims priority, application Japan, Dec. 17, 1976, 51/151807
Int. Cl.[3] G21C *7/00*
U.S. Cl. 376—216 11 Claims



1. A temperature control system for liquid plants in coolant systems of nuclear plants utilizing a heat exchange liquid that is capable of solidifying absent the application of a heat source of a predetermined temperature, comprising:

plant members including a vessel for containing liquid, a pipe line into which the liquid is introduced from the vessel, at least one pump which is connected to the pipe line and forces said liquid to circulate through the pipe line, a heat exchanger coupled with the pipe line, a plurality of heaters which are provided corresponding to the respective control points of said plant members and which heat said plant members at the respective control points, temperature sensors for detecting the temperature of said liquid and said plant members at the respective control points and detecting means for detecting a process value representing the plant;

a temperature control means which receives the output signals of said temperature sensors, calculates at each control point the difference between a reference temperature and the temperature detected by said temperature sensors, and determines a control valve from the result of the calculation to produce control signals for controlling electric power being supplied to said respective heaters;

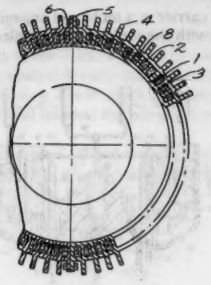
a control unit which receives the output signals from said detecting means and the temperature sensors, selects control information from a temperature control schedule of the plant in accordance with the temperature detected by the temperature sensors and the process value detected by said detecting means, and supplies said temperature control means with the control information determining the reference temperature.

4,339,411
SHIELDING CONTAINER FOR THE TRANSPORTATION AND/OR FOR STORAGE OF SPENT FUEL ELEMENTS

Hans-Günther Knackstedt, Langenselbold; Reiner Laug, Hanau, and Erhard Müller, Gründau, all of Fed. Rep. of Germany, assignors to Degussa Transnuklear GmbH, Hanau, Fed. Rep. of Germany

Filed Apr. 14, 1980, Ser. No. 139,677
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1979, 7911030[U]
Int. Cl.[3] G21F *5/00*
U.S. Cl. 376—272 24 Claims

1. A shielding container suitable for the transportation or storage of spent fuel elements from nuclear reactors, said shielding container having a cooling fin jacket, said jacket being formed of a plurality of joinable, individually removable parts comprising two concentrical, metallic cylindrical wall

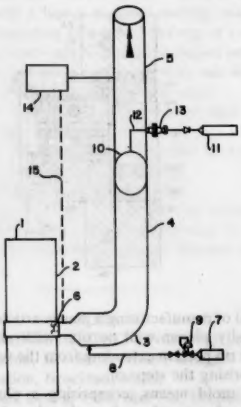


sections joined together by heat conducting bars, said cooling fin jacket being fitted to the container wall.

4,339,412
APPARATUS FOR REDUCING THE CHANCES OF IGNITION AND EXPLOSION DUE TO THE DECOMPOSITION OF HIGH-PRESSURE INDUSTRIAL PROCESS GASES

Pierre Durand, Neuilly sur Seine, and Guy Jouffroy, Saint Arnoult Par Caudedec en Caux, both of France, assignors to Societe Chimique des Charbonnages - CdF Chimie, Paris, France

Filed Apr. 25, 1980, Ser. No. 143,635
Claims priority, application France, Apr. 25, 1979, 79 10443
Int. Cl.[3] G05B *9/00;* C08F *2/34;* C08G *85/00*
U.S. Cl. 422—117 4 Claims



1. Apparatus for evacuating to the atmosphere reactive and/or decomposable gases contained in a high-pressure enclosure, comprising

(a) a high pressure enclosure,

(b) an evacuation conduit adjacent to said enclosure;

(c) pressure-responsive safety means separating said evacuation conduit from said enclosure for automatically providing an evacuation flowpath from said enclosure to said evacuation conduit when the pressure in the enclosure exceeds a predetermined value;

(d) sealing means located downstream of said safety means in the evacuation path of the gases and occupying all of the cross-section of the evacuation conduit, said sealing means automatically providing an evacuation flowpath from said

evacuation conduit when the pressure in the evacuation conduit exceeds a predetermined value; and

(e) a first inert gas supply circuit connected by a conduit to that part of the evacuation conduit located between the safety means and the sealing means, and means for said first supply conduit to control the volume of inert gas fed by said first supply circuit.

4,339,413

METHANOL-SYNTHESIS REACTOR

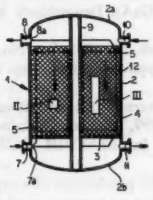
Ulrich Lahne; Peter Hesse, both of Munich; Erhard Kliem, Wolfratshausen; Bernhard Kruis, Pullach, and Reiner Lohmüller, Munich, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,671

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007202

Int. Cl.³ F28D *7/02*

U.S. Cl. 422—200 **7 Claims**



1. A methanol-synthesis reactor comprising:

an elongated housing formed with an inlet at one end and an outlet at the opposite end thereof for effecting synthesis gas flow in a predetermined axial direction through said housing;

means for supporting a gas-permeable body of methanol-synthesis catalyst particles within said housing between said inlet and said outlet;

an array of coolant tubes spaced apart within said housing, said tubes of said array being spaced from one another in said direction and transversely to said direction; and

means for feeding a coolant to and removing said coolant from said array of tubes,

said tubes being of circular cross section with internal diameters between 4 and 50 mm and having a spacing a between neighboring tubes transverse to said direction between 2 and 20 times the minimum linear dimension of the particles of said catalyst, and a spacing c in said direction which is less than 10-a.

4,339,414

METHOD FOR LOADING OF URANYL ION COMPLEXES ON ION EXCHANGE RESIN

Thomas F. Moore, Richardson, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Aug. 30, 1978, Ser. No. 938,289

Int. Cl.³ B01D *15/04*

U.S. Cl. 423—7 **5 Claims**

1. An improved method for removing uranyl ion complexes from a pregnant leach solution containing same with an ion exchange resin, wherein the improvement comprises adding carbon dioxide to said solution prior to said removal.

4,339,415

RECOVERY OF SOLUBLE ALUMINA VALUES FROM ALUMINA BEARING ORES

John I. Choi, Camillus; Bruce E. Kurtz, Marcellus, and Anatoli Omelian, Camillus, all of N.Y., assignors to Allied Corporation, Morris County, Morris Township, N.J.

Filed Dec. 5, 1980, Ser. No. 213,273

Int. Cl.³ C01F *7/56*

U.S. Cl. 423—126 **13 Claims**

1. A process for recovery of soluble alumina values from alumina-bearing ores which comprises the steps of

(a) preparing an aqueous slurry of alumina-bearing ore;

(b) simultaneously contacting, at ambient temperatures, said aqueous slurry with a stream containing an effective amount of an oxidizing agent and a stream containing an effective amount of a reducing agent, the oxidizing agent and the reducing agent being selected such that the simultaneous contacting of the oxidizing agent and the reducing agent with said aqueous slurry spontaneously provides appropriate chemical ions and sufficient energy to raise the temperature of the contacting to about 100° C., to remove soluble alumina values from said alumina-bearing ores, wherein the oxidizing agent is F_2, Cl_2 or Br_2 and wherein the reducing agent is SO_2, NO, NO_2, $M_2S_2O_4$ or $MHSO_3$ and wherein M is an alkali metal cation;

(c) maintaining said simultaneous contact at a temperature of about 100° C. for a time sufficient to remove at least about 50 weight percent of the soluble alumina values from said alumina-bearing ores and to form a soluble alumina solution and insoluble materials;

(d) separating said soluble alumina solution from said insoluble materials; and

(e) recovering the soluble alumina values from said solution.

4,339,416

URANIUM RECOVERY PROCESS

Richard Fitoussi, Versailles, and Claude Musikas, Villebon, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Nov. 16, 1979, Ser. No. 94,889

Claims priority, application France, Nov. 28, 1978, 78 33544

Int. Cl.³ C01G *43/00*

U.S. Cl. 423—10 **10 Claims**

1. A process for the recovery of the uranium present in a phosphoric acid solution by bringing the said solution into contact with an organic solvent suitable for extracting the uranium, wherein the said organic solvent comprises a system of extractants constituted by a dialkyl-dithiophosphoric acid and by a neutral phosphine oxide of formula:

in which R_1, R_2 and R_3 are identical or different alkyl, alkoxyalkyl or aryl radicals.

4,339,417

PROCESS FOR THE PRODUCTION OF CRYSTALLINE ZEOLITE A

Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,726

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007044

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **8 Claims**

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 8.5 to 9.0μ, comprising (1) having present in a container 8 to 12 parts by volume of a sodium aluminate liquor having a concentration

of 50 to 200 g/l Na_2O and 30 to 150 g/l Al_2O_3, (2) simultaneously adding with stirring during a time span of 8 to 15 minutes at a temperature of 30° to 70° C. either (a) 0.5 to 2.5 parts by volume of a sodium aluminate liquor having a concentration of 20 to 120 g/l Na_2O and 5 to 50 g/l Al_2O_3 or (b) such sodium aluminate liquor diluted with up to the same volume of water and (c) 0.1 to 0.6 parts by volume of a waterglass solution having a concentration of 90 to 120 g/l Na_2O and 330 to 380 g/l SiO_2 or (d) such waterglass solution diluted up to 3 parts by volume with water, (3) subsequently stirring over a time span of 25 to 45 minutes, (4) adding during a time span of 8 to 15 minutes a further 15 to 20 parts by volume of the same sodium aluminate liquor as in step (2) as well as subsequently adding 3.0 to 3.5 parts by volume of the same waterglass solution as in step (2), cooling, filtering off the crystalline reaction product and drying.

4,339,418

PROCESS FOR THE PRODUCTION OF ZEOLITE A

Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt and Henkel Kommanditgessel, Duesseldorf, both of, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,727

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007123

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **8 Claims**

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 7 to 8.5μ comprising (1) having present in a container 8 to 12 parts by volume of water, (2) simultaneously adding with stirring during a time span of 5 to 15 minutes at a temperature of 30° to 70° C. either (a) 1.5 to 2.5 parts by volume of sodium aluminate liquor having a concentration of 50 to 200 g/l of Na_2O and 30 to 150 g/l of Al_2O_3 and 0.6 to 2.5 parts by volume of a waterglass solution having a concentration of 90 to 120 g/l of Na_2O and 330 to 380 g/l of SiO_2 or (b) a sodium aluminate liquor and waterglass solution as set forth in (a) wherein the waterglass solution is diluted with water in an amount up to 2.4 times its volume, (3) stirring the reaction mixture for 15 to 45 minutes at a temperature of 30° to 70° C., subsequently adding with stirring during a time span of 100 to 140 minutes at a temperature of 30° to 70° C., a further 15 to 20 parts by volume of a sodium aluminate liquor of the same concentration as in step (2), (5) subsequently with stirring at a temperature of 30° to 70° C. during a time span of 15 to 30 minutes adding a further 1.0 to 3.5 parts by volume of waterglass solution of the same concentration as in step (2), (6) subsequently stirring the reaction mixture over a time span of 20 to 180 minutes at 70° to 100° C., cooling the reaction mixture, filtering off the crystalline reaction product, washing with water to a pH below 10.5 and subsequently drying.

4,339,419

PROCESS FOR THE PRODUCTION OF CRYSTALLINE ZEOLITE POWDER OF TYPE A

Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt and Henkel Kommanditgesellshaft auf Aktien (Henkel KGaA), Duesseldorf, both of, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,730

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1980, 3007080

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **5 Claims**

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 6.7 to 8.0μ comprising (1) having present in a container 8 to 12 parts by volume of water, (2) simultaneously adding with stirring during a time span of 5 to 15 minutes at a temperature of 30° to 70° C. either (a) 2 to 8 parts by volume of sodium aluminate liquor having a concentration of 50 to 200 g/l of Na_2O and 30 to 100 g/l of Al_2O_3 and 0.6 to 1.2 parts by volume of a waterglass solution having a concentration of 90 to 120 g/l of Na_2O and 330 to 380 g/l or (b) a sodium aluminate liquor and waterglass solution as set forth in (a) wherein the waterglass solution is diluted with water in an amount up to 1.5 times its volume (3) stirring for a time span of 10 to 40 at 30° to 70° C. minutes, (4) subsequently adding during a time span of 5 to 15 minutes a further 2 to 3 parts by volume of waterglass solution of the same concentration as in step (2), (5) stirring for a time span of 10 to 40 minutes at a temperature of 30° to 70° C., (6) subsequently with stirring at a temperature of 30° to 70° C. during a time span of 5 to 15 minutes adding a futher 16 to 20 parts by volume of a sodium aluminate liquor of the same concentration as in step (2), (7) subsequently stirring the reaction mixture over a time span of 20 to 180 minutes at a temperature of 75° to 100° C. and filtering off the crystalline product and drying.

4,339,420

PROCESS FOR THE PRODUCTION OF ZEOLITE A

Hans Strack, Alzenau, Fed. Rep. of Germany, assignor to Degussa AG, Frankfurt and Henkel Kommanditgesellschaft Akten (Henkel KGaA), Deusseldorf, both of, Fed. Rep. of Germany

Filed Feb. 24, 1981, Ser. No. 237,731

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1980, 3007087

The portion of the term of this patent subsequent to Jul. 13, 1999, has been disclaimed.

Int. Cl.³ C01B *33/28*

U.S. Cl. 423—329 **3 Claims**

1. A process for the production of a crystalline zeolite powder of Type A having an average particle diameter of 4.3 to 8.5μ comprising (1) having present in a container 8 to 10 parts by volume of water, (2) simultaneously adding with stirring during a time span of 5 to 15 minutes at a temperature of 30° to 70° C. 2 to 8 parts by volume of sodium aluminate liquor having a concentration of 50 to 200 g/l of Na_2O and 30 to 150 g/l of Al_2O_3 and 0.6 to 3.5 parts by volume of waterglass solution having a concentration of 90 to 120 g/l of Na_2O and 330 to 380 g/l of SiO_2, (3) stirring subsequently for a further 15 to 35 minutes, (4) subsequently adding with stirring during a time span of 3 to 150 minutes at a temperature of 30° to 70° C. a further 8 to 26 parts by volume of the sodium aluminate liquor of the same concentration as in step (2), (5) simultaneously with or subsequent to step (4) adding with stirring during a time span of 3 to 60 minutes at a temperature of 30° to 70° C. 1.1 to 2.6 parts by volume of waterglass solution of the same concentration as in step (2), (6) subsequently stirring the entire reaction mixture at a temperature of 75° to 110° C. for 20 to 180 minutes, cooling, filtering off the crystalline reaction product and drying.

4,339,421

SYNTHETIC MAGNESIUM ALUMINOSILICATE, PROCESS FOR THE MANUFACTURE THEREOF, AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

Adrian Schultess, and Jean-Claude Farine, both of Suisse, Switzerland, assignors to Laboratoires OM Societe Anonyme, Meyrin, Switzerland

Filed Aug. 24, 1979, Ser. No. 69,542

Claims priority, application Switzerland, Sep. 7, 1978, 9384/78; Jun. 22, 1979, 5890/79

Int. Cl.³ A61K *33/06, 33/12*; C01B *33/28*

U.S. Cl. 423—330 **2 Claims**

1. A process for manufacturing an amorphous synthetic magnesium aluminosilicate of high adsorbency containing combined CaO and consisting essentially of 47–57% SiO_2, 9–11% Al_2O_3, 3–5% MgO, 1–3% CaO, and less than 5%

Na_2O, balance water to total 100%, said percentages being by weight and calculated analytically, comprising the steps of stirring into a first aqueous solution, containing magnesium sulfate and aluminum sulfate, a second aqueous solution containing sodium silicate and sodium hydroxide,

thereafter adding a third aqueous solution containing calcium chloride, thereby forming a precipitate, while continuing the stirring,

filtering off and washing the precipitate, and

drying the precipitate at a temperature below 100° C.,

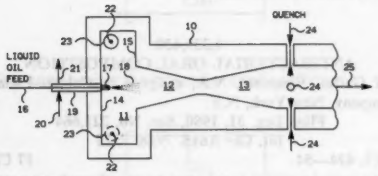
the proportions of the reagents and the temperatures in the process being such that precipitate contains combined SiO_2, Al_2O_3, MgO, CaO and Na_2O within the ratios specified by the above weight percentages and forms at a pH of about 9, and the drying being continued until said water content is obtained.

4,339,422

CARBON BLACK MANUFACTURE

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 16, 1980, Ser. No. 197,455
Int. Cl.³ C01B *31/02*; C09C *1/48*
U.S. Cl. 423—456 **10 Claims**



1. A process for producing high tint residual carbon black which comprises:

(a) introducing a hydrocarbon feed into a generally cylindrical vortex zone having a diameter at least about equal to its length, said feed being introduced as a solid jet stream at essentially zero degree exit spray angle along the axis of said vortex zone;

(b) establishing a mass of hot combustion gases surrounding the jet stream of said hydrocarbon feed in said vortex zone by continuously injecting tangentially thereinto combustion supporting oxygen-containing gas and a combustible fuel;

(c) passing the jet stream of hydrocarbon feed surrounded by hot combustion gases under carbon black forming conditions axially through a venturi-shaped furnace reaction chamber having an inlet diameter which is equal to or less than that of said vortex zone; and

(d) forming carbon black having a high tint residual from said hydrocarbon feed by pyrochemical action due to the heat of the surrounding hot combustion gases in said reaction chamber.

4,339,423

PEROXONIUM SALTS

Karl O. Christe, Calabasas, and William W. Wilson, Canoga Park, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 25, 1980, Ser. No. 115,306
Int. Cl.³ C01B *15/00*
U.S. Cl. 423—462 **3 Claims**

1. A peroxonium salt having the formula $H_3O_2^+X^-$ wherein X^- is selected from the group of anions having the formulas SbF_6^- and AsF_6^-.

3. A method for preparing a salt containing $H_3O_2^+$ cations and $Sb_2F_{11}^-$ anions, said method comprising the steps of:

A. dissolving SbF_5 in anhydrous HF to form a solution:

B. adding H_2O_2 to said solution to form a reaction mixture, said H_2O_2 being added in an amount calculated to provide an excess of SbF_5 in said reaction mixture; and

C. allowing the mixture to react.

4,339,424

METHOD OF PREPARING W OR MO METAL OXIDES

Allan J. Jacobson, Princeton; Kent H. Cheng, Thorofare, and M. Stanley Whittingham, Fanwood, all of N.J., assignors to Exxon Research & Engineering Co., FLorham Park, N.J.

Filed Mar. 20, 1981, Ser. No. 245,965
Int. Cl.³ C01G *39/02, 41/02*
U.S. Cl. 423—606 **10 Claims**

1. A process for preparing a metal oxide having a hexagonal tungsten bronze structure, said oxide having the formula MO_p where M is W or Mo and p is a number from 2 to 3 which comprises contacting a reduced metal oxide of the formula $(NH_mR_{4-m})_q{}^+MO_p$ where each R is independently C_1–C_{20} aliphatic, C_7–C_{14} araliphatic or C_3–C_8 cycloaliphatic with the proviso that adjacent R's, together with the nitrogen atom to which they are attached, may form a 5, 6 or 7 membered heterocyclic ring, m is an integer from 0 to 4, p is a number from 2 to 3 and q is a number from about 0.001 to $\frac{1}{3}$ with aqueous hydrogen peroxide, separating the so-treated reduced metal oxide and heating the separated metal oxide in an oxygen containing atmosphere at temperatures of from about 200° to about 400° C.

4,339,425

PROCESS FOR PRODUCING ACICULAR HYDRATED FERRIC OXIDE PARTICLES

Yasumichi Tokuoka, Tokyo, Japan, assignor to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Nov. 25, 1980, Ser. No. 210,351
Claims priority, application Japan, Jan. 22, 1980, 55/5269
Int. Cl.³ C01G *49/06*
U.S. Cl. 423—633 **1 Claim**

1. A process for producing acicular hydrated ferric oxide particles comprising mainly goethite without branch shapes which comprises premixing aged ferric hydroxide which has been aged by treating an aqueous ferric hydroxide slurry at a temperature between room temperature and 70° C. for 3 to 30 hours, with a newly formed ferric hydroxide or a mixture of ferrous hydroxide and an oxidizing agent, said aged ferric hydroxide being at a molar ratio of from 1:4 to 1:2 to the newly formed ferric hydroxide or ferrous hydroxide, and hydrothermally treating the premixture as a slurry in an autoclave at 100°–250° C. for 1 to 20 hours.

4,339,426

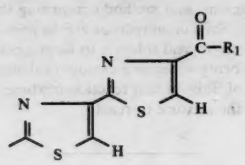
BLEOMYCIN ANALOG

Claude F. Meares, and Leslie D. Anderson, both of Davis, Calif., assignors to Regents of the University of California, Berkeley, Calif.

Filed Mar. 18, 1980, Ser. No. 131,685
Int. Cl.³ A61K *49/00, 43/00*
U.S. Cl. 424—1 **20 Claims**

1. A bleomycin analog comprising:

a modified bleomycin, said bleomycin being modified in one region thereof, said one region being of the structure



wherein R_1 includes a chelating substituent with a plurality of functional groups capable of chelating metal ions.

4,339,427

RADIOIMMUNOASSAY OF THYMOSINα

Allan L. Goldstein, Washington, D.C.; John E. McClure, Fairfax, Va., and Su-Sun Wang, Belmont, Calif., assignors to Hoffmann-la Roche Inc. and George Washington University, both of Nutley, N.J.

Filed Apr. 14, 1980, Ser. No. 139,944

Int. Cl.^{3} G01N *33/56*; A61K *43/00*; C07G *7/00*

U.S. Cl. 424—1 **10 Claims**

5. In a method for the assay of thymosin α_1 in a sample, which method comprises mixing said sample with a known amount of labelled thymosin α_1 and an antibody which will selectively complex with said thymosin α_1, separating the resulting antibody-antigen complex from uncomplexed labelled thymosin α_1, measuring the degree of binding of the said labelled thymosin α_1 in said complex and determining the amount of thymosin α_1 present in said sample by comparing said degree of binding to a standard curve,

the improvement which comprises utilizing as the labelled thymosin α_1 a compound selected from ^{125}I-[Tyr^1]-thymosin α_1 and ^{125}I-[Tyr^1]-desacetylthymosin α_1.

4,339,428

CAPSULE PRODUCT CONTAINING HIGH DOSAGE OF ASPIRIN IN POWDER OR GRANULATED FORM AND ALKALINE TABLET OR PELLET COMPRISING MAGNESIUM CARBONATE, CALCIUM CARBONATE AND A MAGNESIUM DRY COMPONENT

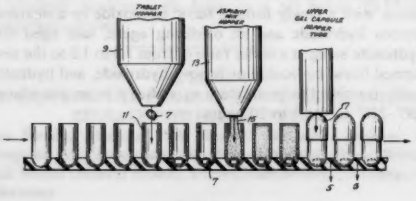
Thomas M. Tencza, Wallington, N.J., assignor to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 179,191, Aug. 18, 1980, Pat. No. 4,294,819. This application Jun. 18, 1981, Ser. No. 273,015

The portion of the term of this patent subsequent to Oct. 13, 1998, has been disclaimed.

Int. Cl.^{3} A61K *9/48, 9/20, 31/60, 33/06*

U.S. Cl. 424—21 **16 Claims**



1. As a unit dosage form a capsule having incorporated therein at least one alkaline tablet and an aspirin mixture; said aspirin mixture being present in said capsule as a powder or granulated material; said alkaline tablet comprising a combination of calcium carbonate, magnesium carbonate and a magnesium oxy component selected from the group consisting of magnesium oxide, magnesium hydroxide and a mixture of magnesium oxide and magnesium hydroxide; the aspirin being present in said capsule at a level of from 325 mg. to about 650 mg.; said capsule being dimensioned so that it may be conveniently swallowed and at the same time is not too small to accommodate effective amounts of capsule ingredients; said alkaline tablet being dimensioned so as to conveniently fit into said capsule; said powder or granulated material being essentially free of antacid and said alkaline tablet being essentially free of aspirin.

4,339,429

TOOTHPASTE ACTIVE AGAINST PLAQUE COMPRISING A COPPER COMPOUND AND A PLASTIC POLISHING AGENT

Helmut Raaf, Bad Schwalbach; Dieter Becker, Darmstadt-Wixhausen; Franz Frosch, Taunusstein; Helmüt Harth, Mainz, and Helmar R. Wägner, Darmstadt, all of Fed. Rep. of Germany, assignors to Blendax-Werke R. Schneider GmbH & Co., Fed. Rep. of Germany

Filed Apr. 9, 1981, Ser. No. 252,406

Claims priority, application European Pat. Off., Apr. 29, 1980, 80102305.2

Int. Cl.^{3} A61K *7/16, 7/18, 7/24, 33/34*

U.S. Cl. 424—49 **11 Claims**

1. An aqueous toothpaste composition for reducing or preventing the formation of dental plaque comprising at least one water-soluble copper compound and at least one polishing agent, the major part of said polishing agent being finely divided synthetic plastic material.

4,339,430

ANTIBACTERIAL ORAL COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

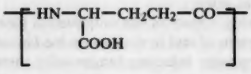
Filed Dec. 31, 1980, Ser. No. 221,664

Int. Cl.^{3} A61K *7/16, 7/22*

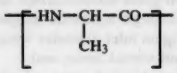
U.S. Cl. 424—54 **17 Claims**

1. An oral dentifrice toothpaste or mouthwash composition comprising an orally acceptable vehicle, at least one cationic nitrogen-containing antibacterial antiplaque agent whose use has been observed to lead to staining of dental surfaces, and as anti-staining additive, an effective stain-inhibiting amount of a copolymer consisting essentially of:

(A) n units having the molecular configuration

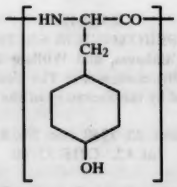


(B) m units having the molecular configuration



and

(C) p units having the molecular configuration



the ratio of (n+m):p ranging from about 5:1 to about 9:5:1 and the ratio of m:n ranging from 0:1 to about 0.6:1,

the molecular weight of the copolymer ranging from about 5,000 to about 150,000.

4,339,431

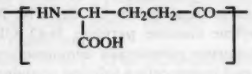
ANTICALCULUS ORAL COMPOSITION

Abdul Gaffar, Somerset, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

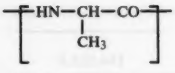
Filed Dec. 31, 1980, Ser. No. 221,665
Int. Cl.[3] A61K *7/16, 7/22*
U.S. Cl. 424—54 8 Claims

1. An oral dentifrice toothpaste or mouthwash composition comprising an orally acceptable vehicle containing in an effective amount as an anticalculus agent a copolymer consisting essentially of

(A) n units having the molecular configuration

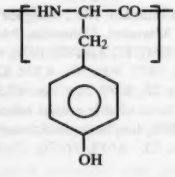


(B) m units having the molecular configuration



and

(C) p units having the molecular configuration



the ratio of (n+m):p ranging from about 5:1 to about 9.5:1 and the ratio of m:n ranging from 0:1 to about 0.6:1, the molecular weight of the copolymer ranging from about 5,000 to about 150,000.

4,339,432

ORAL MOUTHWASH CONTAINING ZINC AND GLYCINE

Thomas W. Ritchey, Norwood; John M. Weaver, Glen Rock, and Martin Sapone, Tenafly, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Continuation-in-part of Ser. No. 50,392, Jun. 20, 1979, abandoned, and Ser. No. 50,393, Jun. 20, 1979, abandoned. This application Feb. 17, 1981, Ser. No. 235,247
Claims priority, application Canada, Jun. 19, 1980, 354364; Jun. 19, 1980, 354375; United Kingdom, Jun. 19, 1980, 8020065
Int. Cl.[3] A61K *7/16, 7/22*
U.S. Cl. 424—54 9 Claims

1. An oral mouthwash composition having a pH of about 4.5 to about 8.0 comprising a physiologically acceptable zinc salt or zinc glycinate in an amount sufficient to provide about 0.04% to about 0.7% by weight of the composition of soluble zinc ions wherein said zinc salts may have a tendency to produce the organoleptically displeasing effect of astringency; and glycine at a level of about 0.01% to about 4% by weight of the composition as the essential effective agent reducing astringency or said glycine serving to effectively solubilize said zinc salts at a pH of about 8 or above.

4,339,433

ADDITIVES FOR PERITONEAL DIALYSIS SOLUTIONS

Nicholas J. Kartinos, Park Ridge, Ill.; Terry J. McGary, 5651 E. Rocky Mountain Ave., and Karl D. Nolph, 801 Westport, both of, Columbia, Mo. 65201, assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill., a part interest

Filed Jan. 9, 1981, Ser. No. 223,638
Int. Cl.[3] A61K *31/74, 37/00, 31/70*
U.S. Cl. 424—78 17 Claims

1. In a peritoneal dialysis solution containing ion concentration to permit diffusion across the peritoneum after infusion of the solution into the peritoneal cavity of a patient, the improvement comprising:

said solution containing a polyionic osmolarity-increasing agent which is of a molecular weight sufficient to essentially prevent diffusion of said agent across the peritoneum, said agent being selected from the group consisting of the predominantly sodium salts of:

(a) ethylene-maleic acid copolymer resins;

(b) carboxymethylpolysaccharides;

(c) carboxymethylpolyvinyl alcohol;

(d) polypeptides and proteins containing at least 10 mole percent of peptide units selected from the group consisting of aspartic acid, glutamic acid, and combinations thereof, having pendant carboxyl groups;

(e) esters of polyvinyl alcohol with acids selected from the group consisting of sulfuric acid, phosphoric acid, polycarboxylic acids, and haloalkyl carboxylic acids; having pendant carboxyl groups;

(f) the reaction product between (1) polypeptides and proteins having pendant amine groups and (2) acids selected from the group consisting of dicarboxylic acids and anhydrides thereof, haloaliphatic carboxylic acids, and haloalkenic carboxylic acids;

(g) polyesters having pendant carboxyl groups, comprising hydroxylpolycarboxylic acids;

(h) poly(methylvinyl ether—maleic acid) having pendant carboxyl groups;

(i) the reaction product of (1) an amino acid and (2) acid halides of dicarboxylic acids, to yield a polyamide polymer chain having pendant carboxyl groups; and

(j) predominantly sodium salts of dextran sulfate having a molecular weight of 2,000 to 120,000.

4,339,434

METHOD OF INCREASING THE INCIDENCE OF FEMALE OFFSPRING

Ronald J. Ericsson, Sausalito, Calif., assignor to Gametrics Limited, Sausalito, Calif.

Filed Aug. 17, 1981, Ser. No. 293,079
Int. Cl.[3] A61K *35/48*
U.S. Cl. 424—105 11 Claims

1. A method for promoting the conception of a female fetus in a fertile female mammal for whom a female offspring is desired, which comprises the steps of inducing ovulation in the female mammal with an ovulation inducing agent and thereafter artificially inseminating the female mammal proximate the time of ovulation with a motile sperm enriched fraction of sperm of that mammal from which immotile sperm and non-sperm components of the semen have been separated and which is suspended in a liquid vehicle which is physiologically acceptable to the sperm.

4,339,435

ANTI-TUMOR SUBSTANCE

Norihiko Adachi; Yoshikazu Fukai, both of Yokohama, and Hisanori Kanayama, Machida, all of Japan, assignors to Japan Synthetic Rubber Co., Ltd., Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,482

Claims priority, application Japan, Feb. 22, 1979, 54/19081

Int. Cl.[3] A61K *35/00, 31/70;* C07G *3/00;* C12P *19/04*

U.S. Cl. 424—115 14 Claims

1. A substance having an anti-tumor activity obtained by transplanting a part of the internal tissue of a sclerotium of *Poria cocos* (Fr.) Wolf into an a culture medium, subjecting it to pure culturing of hyphae of said microorganism to obtain mycelia thereof, separating said mycelia and extracting said mycelia with at least one medium selected from the group consisting of water and water-soluble organic solvent.

10. A method for preparing a substance having an anti-tumor activity, comprising transplanting a part of the internal tissue of a sclerotium of *Poria cocos* (Fr.) Wolf into a culture medium, subjecting it to pure culturing of hyphae of said microorganism to obtain mycelia thereof, separating said mycelia, and extracting said mycelia with at least one solvent selected from the group consisting of water and water-soluble organic solvents.

4,339,436

α-AMYLASE INHIBITOR FROM A STREPTOMYCETE AND PROCESS FOR ITS PREPARATION

Volker Oeding, Kelkheim; Werner Pfaff, Hofheim am Taunus; Laszlo Vertesy, Eppstein, and Hans-Ludwig Weidenmüller, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 109,170, Jan. 2, 1980, Pat. No. 4,282,318, which is a division of Ser. No. 870,247, Jan. 17, 1978, Pat. No. 4,226,764. This application Feb. 23, 1981, Ser. No. 237,097

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1977, 2701890

Int. Cl.[3] A61K *35/00, 37/00*

U.S. Cl. 424—115 2 Claims

1. A composition for the regulation of the blood sugar level in the treatment of diabetes, pre-diabetes or adiposity, containing a pharmaceutically acceptable carrier, and, as an active ingredient thereof, an effective amount of a peptidic glycoside hydrolase inhibitor obtained by cultivating Streptomyces tendae 4158 (ATCC No. 31210) and isolating the inhibitor from the culture, said inhibitor having a molecular weight in the range of from 5,000 to 10,000, an absorption maximum in ultraviolet light at 276 nm, an isoelectric point of 4.4 and the following amino acid composition:

aspartic acid	5–6	isoleucine	1–2
threonine	5–6	leucine	3–4
serine	3–5	tyrosine	4–5
glutamic acid	5–6	phenylalanine	0–2
proline	2–3	histidine	1–2
glycine	5–6	lysine	0–1
alanine	5–6	arginine	2–3
cysteine	3–4	tryptophan	1–2
valine	5–6		

4,339,437

ANTI-TUMOR METHOD

Barnett Rosenberg, Holt; Loretta VanCamp, East Lansing, and Thomas Krigas, Okemos, all of Mich., assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 754,512, Dec. 27, 1976, Pat. No. 4,177,263, which is a continuation of Ser. No. 405,184, Oct. 10, 1973, abandoned, which is a continuation of Ser. No. 230,533, Feb. 28, 1972, abandoned, which is a continuation of Ser. No. 30,239, Apr. 20, 1970, abandoned. This application Jul. 26, 1979, Ser. No. 60,961

The portion of the term of this patent subsequent to Feb. 4, 1996, has been disclaimed.

Int. Cl.[3] A61K *33/24, 31/555, 31/28*

U.S. Cl. 424—131 8 Claims

1. a method of treating animal malignant tumor cells sensitive to a planar dsp^2 platinum(II) coordination compound or an ochtahedral d^2sp^3 platinum(IV) coordination compound wherein the donor ligands are Cl, Br, CN, NO_3, ethylene diamine, propylene diamine, pyridine, H_2O, OH, OS, in animals which comprises parenterally administering to an animal afflicted with said tumor cells a solution containing one of said compounds in an amount sufficient to cause regression of the animal tumor cells.

4,339,438

INJECTABLE MALE ANIMAL STERILANT FOR SELECTIVELY CONTROLLING THE FUNCTION OF TESTES

Mostafa S. Fahim, Columbia, Mo., assignor to The Curators of the University of Missouri, Columbia, Mo.

Division of Ser. No. 651,712, Jan. 23, 1976, abandoned, and Ser. No. 757,099, Jan. 5, 1977, Pat. No. 4,156,427. This application May 25, 1979, Ser. No. 42,550

The portion of the term of this patent subsequent to May 29, 1996, has been disclaimed.

Int. Cl.[3] A61K *31/70, 33/30*

U.S. Cl. 424—145 11 Claims

1. A sterile solution in unit dosage form for injection into the testes or scrotum of male animals having scrotal testes, said solution comprising a mixture of a water soluble physiologically acceptable zinc salt and a water soluble physiologically acceptable tannin, said zinc salt being present in an amount equivalent to the amount of zinc ion present in from about 5 mg to 125 mg of zinc sulfate heptahydrate and said tannin being present in an amount equivalent to from about 2 mg to 125 mg of tannic acid, said solution being buffered to a pH from about 4.0 to about 6.5.

4,339,439

PHARMACEUTICAL METHODS AND COMPOSITIONS

Joseph P. Buyniski, Syracuse; Robert L. Cavanagh, Manlius, and Maxwell Gordon, Syracuse, all of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 225,945

Int. Cl.[3] A61K *37/00*

U.S. Cl. 424—177 17 Claims

1. A method for the treatment of peptic ulcers in a warm-blooded animal in need of such treatment which comprises concomitantly administering to said animal a peptic activity-inhibiting amount of pepstatin and an effective antiulcerogenic amount of etintidine, or a pharmaceutically acceptable acid addition salt thereof.

4,339,440

ENKEPHALIN ANALOGS AND A PROCESS FOR THE PREPARATION THEREOF

Sandor Bajusz; Andras Ronai, and Jozsef Szekely, all of Budapest, Hungary, assignors to Richter Gedeon Vegyeszeti Gyar RT, Budapest, Hungary

Filed Jan. 23, 1981, Ser. No. 227,766

Claims priority, application Hungary, Jan. 25, 1980, 155

Int. Cl.³ A61K *37/00;* **C07C** *103/52*

U.S. Cl. 424—177 **4 Claims**

1. An new enkephalin analog of the formula (I),

Tyr-X-Gly-Phe-Y (I)

wherein

Tyr, Gly and Phe represent L-tyrosyl, glycyl and L-phenylalanyl residues, respectively,

X is a glycyl group or a D-α-aminocarboxylic acid residue with a lower alkyl, lower thioalkyl or phenyl-(lower)-alkyl side chain, and

Y is the residue of an L, D or DL-α-aminophosphonic acid or L, D or DL-α-aminosulfonic acid, each having a lower alkyl side chain,

or a salt thereof.

4,339,441

CARDIOACTIVE FACTOR

Sumner M. Kalman, 2299 Tasso, Palo Alto, Calif. 94301, and Ruth M. Jones, Redwood City, Calif., assignors to Sumner M. Kalman, Redwood City, Calif.

Filed Oct. 30, 1981, Ser. No. 316,926

Int. Cl.³ A61K *37/00, 35/14*

U.S. Cl. 424—177 **12 Claims**

1. A proteinaceous cardioactive factor endogenous to mammalian blood that:

a. is insoluble in 10% w/v polyethylene glycol, 6000 mw, at 4° C. and at room temperature;

b. is elutable from ion exchange carboxymethyl cellulose with 0.5 M NaCl at pH 5;

c. has both positive inotropic and positive chronotropic activities that are labile at 0° C. and relatively stable at 25° C. and 40° C.;

d. is separable by agarose gel filtration into two fractions, one of which has an apparent molecular weight of about 130,000 daltons and the other of which has an apparent molecular weight of about 30,000 daltons, and both of which exhibit said activities; and

e. achieves peak positive inotropic activity before peak positive chronotropic activity.

4,339,442

GYNOSAPONINS, THEIR USE AND A PROCESS FOR PREPARING THE SAME

Tsunematsu Takemoto, 36-5, Shimonakasu, Nishisuga-cho, Tokushima; Shigeru Arichi, 1-1002, 6, Terauchi 2-chome, Toyonaka, Osaka; Shigenobu Arihara, 157-1, Jyoryo, Jyoroku-cho, Tokushima; Tadashi Nakajima, 12-9-110, Hirata 2-chome, Ibaraki; Megumi Okuhira, 3-34-403, Wakayamadai 2-chome, Shimamoto-cho, Mishima-gun, Osaka, and Yoshihiro Uchida, 22-23, Izuo 1-chome, Taisho-ku, Osaka, all of Japan

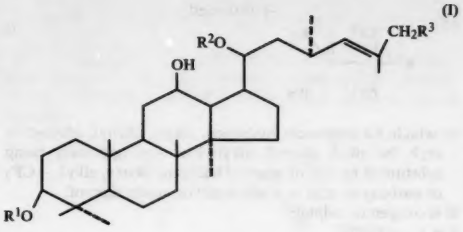
Filed Nov. 7, 1980, Ser. No. 205,377

Claims priority, application Japan, Mar. 11, 1980, 55-30635; Mar. 11, 1980, 55-30636; May 8, 1980, 55-61507; May 8, 1980, 55-61508; May 8, 1980, 55-61509; Sep. 27, 1980, 55-134684

Int. Cl.³ A01N *31/00;* **C07G** *3/00*

U.S. Cl. 424—182 **70 Claims**

1. A compound of the formula (I):



(I)

wherein

(a) when R^1 is [β-D-glucopyranosyl (1→2)-α-L-rhamnopyranosyl (1→6)]-β-D-glucopyranosyl group, R^2 is hydrogen, β-D-glucopyranosyl (1→6)-β-D-glucopyranosyl group, α-L-rhamnopyranosyl (1→6)-β-D-glucopyranosyl group or β-D-glucopyranosyl group and R^3 is hydrogen atom or hydroxy group;

(b) when R^1 is β-D-glucopyranosyl (1→2)-β-D-glucopyranosyl group, R^2 is α-L-rhamnopyranosyl (1→6)-β-D-glucopyranosyl group, and R^3 is hydrogen atom or hydroxy group;

(c) when R^1 is α-L-rhamnopyranosyl (1→6)-β-D-glucopyranosyl group, R^2 is β-D-glucopyranosyl (1→6)-β-D-glucopyranosyl group, α-L-rhamnopyranosyl (1→6)-β-D-glucopyranosyl or β-D-glucopyranosyl group and R^3 is hydrogen atom;

(d) when R^1 is D-glucopyranosyl group, R^2 is β-D-xylopyranosyl (1→6)-β-D-glucopyranosyl, α-L-rhamnopyranosyl (1→6)-β-D-glucopyranosyl or β-D-glucopyranosyl (1→6)-β-D-glucopyranosyl group and R^3 is hydrogen atom;

(e) when R^1 is hydrogen atom, R^2 is β-D-glucopyranosyl, β-D-xylopyranosyl (1→6)-β-D-glucopyranosyl or α-L-rhamnopyranosyl (1→6)-β-D-glucopyranosyl group and R^3 is hydrogen atom or hydroxy group; except the case where R_1 and R_3 are hydrogen atom and R_2 is β-D-glucopyranosyl group;

(f) when R^1 is β-D-xylopyranosyl (1→2)-β-D-glucopyranosyl group, R^2 is β-D-xylopyranosyl (1→6)-β-D-glucopyranosyl or α-L-rhamnopyranosyl (1→6)-β-D-glucopyranosyl group and R^3 is hydrogen atom, or non-toxic salt thereof.

43. A method for activating a body cell in a host so as to prevent aging of the cell which comprises administering to a host a saponin isolated from *Gynostemma pentaphyllum Makino* or a botanically similar plant thereto which belongs to Cucurbitaceae together with a pharmaceutically acceptable carrier.

4,339,443

COMPOUNDS AND COMPOSITIONS

Alister C. Baillie, Cambridge; Brian J. Wright, Bishops Stortford, and Kenneth Wright, Cambridge, all of England, assignors to FBC Limited, Cambridge, England

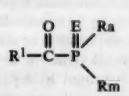
Filed Aug. 28, 1979, Ser. No. 70,440

Claims priority, application United Kingdom, Sep. 22, 1978, 37723/78; Nov. 18, 1978, 45140/78

Int. Cl.³ A01N *57/20, 57/24;* **C07F** *9/30, 9/65*

U.S. Cl. 424—200 **9 Claims**

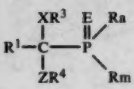
1. A compound of the formulae:



I

or

-continued



Ia

in which Ra represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl, $-CF_3$ or carboxylic acid or a salt, ester or amide thereof,

E is oxygen or sulphur,

Rm is $-O^{\ominus}M^{\oplus}$,

$M^{\oplus}$ is one equivalent of an agriculturally acceptable cation,

R^1 represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl, $-CF_3$ or carboxylic acid or a salt, ester or amide thereof, and

X and Z, which may be the same or different, each represent oxygen, sulphur or a group $-NR^5-$,

R^5 represents hydrogen, alkyl, or aryl,

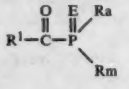
R^3 and R^4, which may be the same or different each represent alkyl, or aryl each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxycarbonyl; or R^3 and R^4 together form alkylene, or arylene each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxycarbonyl,

or XR^3 and ZR^4 together form carbonyl oxygen $=C(CN)_2$ or $=NR^{10}$ in which R^{10} represents alkoxy C 1 to 6, benzyloxy, hydroxy, phenyl, —NH phenyl, —NH—(2,4-dinitrophenyl), $-NHCONH_2$ or $-NHCSNH_2$,

or one of XR^3 and ZR^4 is —OH (or esters or ethers thereof) and the other is —CN or $-SO_3{}^{\ominus}M^{\oplus}$,

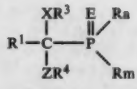
XR^3 and ZR^4 each containing up to and including 10 carbon atoms.

9. A pesticidal composition which comprises a compound of the formulae:



I

or



Ia

in which Ra represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl, $-CF_3$ or carboxylic acid or a salt, ester or amide thereof,

E is oxygen or sulphur,

Rm is $-O^{\ominus}M^{\oplus}$,

$M^{\oplus}$ is one equivalent of an agriculturally acceptable cation,

R^1 represents hydrogen, alkyl, alkenyl, alkynyl or aryl; the alkyl, alkenyl, alkynyl or aryl optionally being substituted by one or more of halogen, alkoxy, alkyl, $-CF_3$ or carboxylic acid or a salt, ester or amide thereof, and

X and Z, which may be the same or different, each represent oxygen, sulphur or a group $-NR^5-$,

R^5 represents hydrogen, alkyl, or aryl,

R^3 and R^4, which may be the same or different each represent alkyl, or aryl each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxycarbonyl; or R^3 and R^4 together form alkylene, or arylene each of which may optionally be substituted by hydroxy, alkoxy, alkyl, halogen, carbonyl oxygen or alkoxycarbonyl,

or XR^3 and ZR^4 together form carbonyl oxygen $=C(CN)_2$or $=NR^{10}$ in which R^{10} represents alkoxy C 1 to 6, benzyloxy, hydroxy, phenyl, —NH phenyl, —NH—(2,4-dinitrophenyl), $-NHCONH_2$ or $-NHCSNH_2$,

or one of the XR^3 and ZR^4 is —OH (or esters or ethers thereof) and the other is —CN or $-SO_3{}^{\ominus}M^{\oplus}$,

XR^3 and ZR^4 each containing up to and including 10 carbon atoms in admixture with a carrier or a surface active agent.

4,339,444

NOVEL OXIME-PHOSPHATE COMPOUNDS

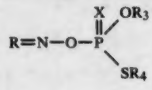
Themistocles D. J. D'Silva, South Charleston, and Leonard E. Hodakowski, St. Albans, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Apr. 1, 1981, Ser. No. 249,819

Int. Cl.³ A01N *57/12, 57/14, 57/16;* **C07F** *9/09*

U.S. Cl. 424—202 **52 Claims**

1. Compounds of the formula:



wherein:

X is oxygen or sulfur;

R_3 and R_4 are individually alkyl; provided that the total number of aliphatic carbon atoms in each of R_3 and R_4 does not exceed six;

R is:

a.

wherein:

R_1 is alkyl, cycloalkyl or phenyl, all of which may be unsubstituted or substituted with one or more alkyl, halogen, alkoxy, or alkylthio substituents; provided that the total number of aliphatic carbon atoms in any alkyl, alkoxy or alkylthio substituent may not exceed eight; and provided further that the total number of aliphatic carbon atoms in R_1 may not exceed sixteen; and provided further that when R_1 is cycloalkyl, the total number of aliphatic carbon atoms in said cycloalkyl ring structure may be no less than three and may not exceed six;

R_2 is alkyl, provided that the total number of aliphatic carbon atoms in R does not exceed eight; or

b.

wherein:

A is a three or four-membered divalent aliphatic chain, which may be optionally substituted by one or more alkyl or acyl groups each containing no more than six carbon atoms, and which may include in said chain one or more divalent:

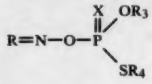
sulfur, sulfinyl, sulfonyl, oxygen, carbonyl, thiono or dicyanomethylidene moieties; or

amino moieties, which may be optionally substituted with alkyl, alkenyl, alkoxyalkyl or acyl groups having no more than six carbon atoms; or

imino moeties of the formula:

wherein Y is alkyl, alkenyl, alkynyl, dialkylamino, cyano, alkylsulfonyl, aryl or arysulfonyl groups, aryl groups being optionally substituted with halogen or alkyl substitutents having no more than ten carbon atoms.

39. A method of controlling insects, mites or nematodes which comprises subjecting them to an insecticidally, miticidally or nematocidally effective amount of a compound of the formula:



wherein:

X is oxygen or sulfur;

R_3 and R_4 are individually alkyl; provided that the total number of aliphatic carbon atoms in each of R_3 and R_4 does not exceed six;

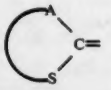
R is:

a.

wherein:

R_1 is alkyl, cycloalkyl or phenyl, all of which may be unsubstituted or substituted with one or more alkyl, halogen, alkoxy or alkylthio substituents; provided that the total number of aliphatic carbon atoms in any alkyl, alkoxy or alkylthio substituent may not exceed eight; and provided further that the total number of aliphatic carbon atoms in R may not exceed sixteen; and provided further that when R_1 is cycloalkyl, the total number of aliphatic carbon atoms in said cycloalkyl ring structure may be no less than three and may not exceed six;

R_2 is alkyl, provided that the total number of aliphatic carbon atoms in R_2 does not exceed eight; or



b.

wherein:

A is a three- or four-membered divalent aliphatic chain, which may be optionally substituted by one or more alkyl groups each containing no more than six carbon atoms, and which may include in said chain one or more divalent:

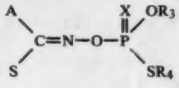
sulfur, sulfinyl, sulfonyl, oxygen, carbonyl, thiono or dicyanomethylidene moieties; or

amino moieties, which may be optionally substituted with with alkyl, alkenyl, alkoxyalkyl or acyl groups having no more than six carbon atoms; or

imino moieties of the formula:

wherein Y is alkyl, alkenyl, alkynyl, dialkylamino, cyano, alkylsulfonyl, aryl or arylsulfonyl groups, said aryl groups being optionally substituted with halogen or alkyl substituents having no more than ten carbon atoms.

47. A method of controlling insects, mites and nematodes which comprises subjecting them to an insecticidally, miticidally or nematocidally effective amount of a compound of the formula:



wherein:

X is oxygen or sulfur;

R_3 and R_4 are individually alkyl;

A is a three- or four-membered divalent aliphatic chain, which may be optionally substituted by one or more alkyl groups each containing no more than six carbon atoms, and which may include in said chain one or more divalent:

sulfur, sulfinyl, sulfonyl, oxygen, carbonyl, thiono or dicyanomethylidene moieties; or

amino moieties, which may be optionally substituted with alkyl, alkenyl, alkoxyalkyl or acyl groups having no more than six carbon atoms; or

imino moieties of the formula:

wherein Y is alkyl, alkenyl, alkynyl, dialkylamino, cyano, alkylsulfonyl, aryl or arysulfonyl groups, said aryl groups being optionally substituted with halogen or alkyl moieties having no more than ten carbon atoms.

4,339,445

METHOD FOR COMBATING VIRUS INFECTION

Bertil F. H. Eriksson, Södertälje; Åke J. E. Helgstrand, Enhörna; Alfons Misiorny, Bandhagen; Göran B. Stening, and Stig-Åke A. Stridh, both of Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Södertälje, Sweden

Continuation-in-part of Ser. No. 807,783, Jun. 20, 1977. This application Dec. 21, 1978, Ser. No. 971,931

Claims priority, application Sweden, Jul. 1, 1976, 7607496

The portion of the term of this patent subsequent to Jul. 29, 1997, has been disclaimed.

Int. Cl.³ A61K *31/66*

U.S. Cl. 424—212 **7 Claims**

2. A method for the treatment of infections caused by hepatitis virus in animals or man by administering to an animal or man in need of such treatment phosphonoformic acid or a physiologically acceptable salt thereof in an amount effective to treat said infection.

4,339,446

5-SULFAMOYL-ORTHANILIC ACIDS, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS MEDICAMENTS

Karl Stürm, Heidesheim, and Roman Muschaweck, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

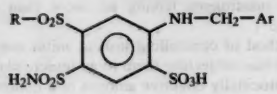
Filed Feb. 20, 1981, Ser. No. 236,605

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1980, 3006686

Int. Cl.³ A61K *31/63*; C07C *143/80*; C07D *307/36*

U.S. Cl. 424—228 **6 Claims**

1. A compound of the formula



or a physiologically acceptable salt thereof wherein R is alkyl, alkenyl, cycloalkyl, or cycloalkylalkyl, each having up to 10 carbon atoms, or R is phenyl, and Ar is phenyl, thienyl, or furyl.

5. A salidiuretic pharmaceutical preparation comprising a salidiuretically effective amount of a compound or salt as in claim 1 together with a pharmaceutically acceptable carrier for the oral or intravenous administration thereof.

4,339,447

PHARMACEUTICAL PREPARATIONS

Walter Boguth, Riehen, Switzerland, and Georges Hirth, Huningue, France, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Jan. 27, 1981, Ser. No. 228,792
Claims priority, application Switzerland, Feb. 7, 1980, 983/80
Int. Cl.³ A61K *31/33*
U.S. Cl. 424—244 **7 Claims**

1. A pharmaceutical preparation comprising an effective amount of a benzodiazepine and a solvent containing glycerol lower-alkyl ether, said glycerol lower-alkyl ether and said solvent being present in an amount sufficient to dissolve said active ingredient.

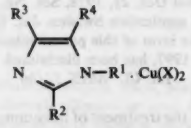
4,339,448

IMIDAZOLE-COPPER COMPLEX COMPOUNDS AND FUNGICIDES CONTAINING THEM

Toni Dockner, Meckenheim; Anton Frank, Ludwigshafen, and Ernst-Heinrich Pommer, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1979, Ser. No. 87,556
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1978, 2847441
Int. Cl.³ A01N *55/02*; C07F *1/08*
U.S. Cl. 424—245 **5 Claims**

1. An imidazole-copper complex compound of the formula



wherein

R^1 is hexyl, heptyl, octyl, decyl, undecyl, dodecyl, tridecyl, tetradecyl, hexadecyl, octadecyl, p-aminophenyl, cyanobenzyl, phenylethyl, isobutyl-benzyl, pyrrolidylethyl, morpholinoethyl, piperidinoethyl, di-butylaminoethyl or phenylbenzylaminoethyl;

R^2 is hydrogen, methyl, ethyl, propyl, isopropyl, octyl, decyl, dodecyl, octadecyl, phenyl, methoxyphenyl, benzyl, indanyl, di-methylphenyl or butylphenyl;

R^3 is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, isobutyl, phenyl or cyclohexyl;

R^4 is hydrogen, nitro, cyano, carboxy, hydroxymethyl or hydroxyethyl; and

X is the anion of a mineral acid or a lower fatty acid.

4. A process for combatting phytopathogenic fungi, which comprises treating the fungi or the objects to be protected against fungus attack with a fungicidally effective amount of an imidazole-copper complex compound as set forth in claim 1.

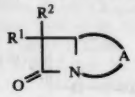
4,339,449

ANALOGOUS COMPOUNDS OF CEPHALOSPORINS, AND PHARMACEUTICAL COMPOSITION COMPRISING THE SAME

Masashi Hashimoto, Takarazuka, and Matsuhiko Aratani, Suita, both of Japan, assignors to Fujisawa Pharmaceutical Company, Limited, Osaka, Japan

Filed Mar. 10, 1980, Ser. No. 128,507
Claims priority, application United Kingdom, Mar. 27, 1979, 7910719
Int. Cl.³ C07D *513/04*; A61K *31/54*
U.S. Cl. 424—246 **12 Claims**

1. A compound of the formula:

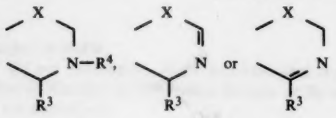


in which

R^1 is amino, acylamino, mono- or di- or triphenyl (lower) alkylamino,

R^2 is hydrogen or lower alkoxy,

A is a group of the formula:



wherein

X is —S— or

R^3 is carboxy or a protected carboxy group and

R^4 is hydrogen, hydroxy or acyl,

and pharmaceutically acceptable salts thereof.

12. A method for treating an infectious diseases caused by pathogenic microorganisms, which comprises administering an antimicrobially effective amount of a compound of claim 1 to infected human being and animals.

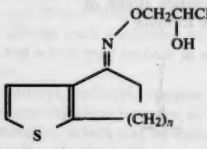
4,339,450

AMINOPROPAN-2-01 DERIVATIVES AND PHARMACEUTICAL COMPOSITIONS

Jean P. Mafrand, Toulouse, and Jean Courregelongue, Garonne, both of France, assignors to Sanofi, Paris, France

Filed Dec. 22, 1980, Ser. No. 219,213
Claims priority, application France, Dec. 21, 1979, 79 31402
Int. Cl.³ A61K *31/535, 31/38*; C07D *413/12, 333/54*
U.S. Cl. 424—248.51 **47 Claims**

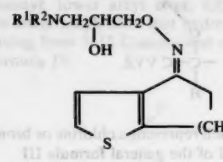
1. Derivatives of 1-aminopropan-2-ol of the formulae:



(I)

E-isomer

-continued



(II)

Z-isomer

wherein R^1 and R^2, which can be the same or different, are hydrogen atoms, straight-chained or branched alkyl radicals containing up to 10 carbon atoms; mono- or polycyclic cycloalkyl radicals containing up to 14 carbon atoms and optionally substituted one or more times by alkyl radicals containing up to 4 carbon atoms; straight-chained or branched alkenyl radicals containing 3 to 7 carbon atoms; straight-chained or branched alkynyl radicals containing 3 to 7 carbon atoms; aryl radicals or aralkyl radicals containing up to 4 carbon atoms in the alkyl moiety, the aromatic nuclei being optionally substituted one or more times by halogen atoms or hydroxyl groups or alkyl or alkoxy radicals containing up to 4 carbon atoms; heteroaryl radicals or heteroaralkyl radicals containing up to 4 carbon atoms in the alkyl moiety; aminoalkyl radicals containing up to 4 carbon atoms and optionally mono- or di-substituted on the nitrogen atom by alkyl radicals containing up to 4 carbon atoms; alkoxyalkyl radicals; aralkoxyalkyl radicals; or aryloxyalkyl radicals; or R^1 and R^2, together with the nitrogen atom to which they are attached, form a heterocyclic radical containing 5 to 7 ring members and optionally containing another heteroatom selected from oxygen, sulphur and nitrogen, the nitrogen being optionally substituted by an alkyl radical containing up to 6 carbon atoms or by an aryl, aralkyl or aroyl radical, the aromatic nucleus of which is optionally mono- or polysubstituted by halogen atoms or hydroxyl groups; or alkyl or alkoxy radicals containing up to 4 carbon atoms; and n is 1, 2 or 3; and the addition salts thereof with pharmaceutically-acceptable inorganic or organic acids.

24. A pharmaceutical composition for use in the treatment and control of cardiac disorders in warm-blooded animals comprising an effective amount of at least one derivative according to claim **1** in admixture with a solid or liquid pharmaceutical diluent or carrier.

4,339,451

FLAVOR STABILIZED BEET COLORANT COMPOSITION

Joseph D. Albaum, Pleasantville, N.Y.; Ronald W. Ponzoni, Nutley, N.J., and Eric C. Johnson, Pleasantville, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 29, 1980, Ser. No. 191,569
Int. Cl.³ A23L *1/272*
U.S. Cl. 426—250 **26 Claims**

1. A co-dried food color composition comprising:

(a) beet extract; and

(b) a flavor-stabilizing amount of a food-acceptable polyvalent metal salt, wherein the weight percent of the polyvalent metal ion; based on the weight of the dry composition is from 1% to 30%.

4,339,452

METHODS OF INHIBITING BLOOD PLATELET AGGREGATION WITH CAROVERINE FUMARATE

Hiroto Hara, Machida, and Akihiro Narimatsu, Yokohama, both of Japan, assignors to Medichemie AG, Ettingen, Switzerland

Filed Dec. 19, 1980, Ser. No. 218,284
Claims priority, application Japan, Dec. 28, 1979, 54/173249
Int. Cl.³ A61K *31/495*
U.S. Cl. 424—250 **11 Claims**

1. A method of inhibiting blood platelet aggregation in a patient requiring such treatment, comprising administering to said patient a therapeutic dosage of a platelet aggregation inhibiting substance containing caroverine fumarate as an active ingredient.

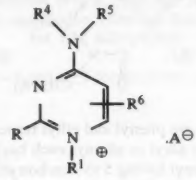
4,339,453

ANTIMICROBIAL AMINOPYRIMIDINIUM SALTS

Nathaniel Grier, Englewood; Elbert E. Harris, Westfield; Henry Joshua, Elizabeth; Arthur A. Patchett, Westfield; Bruce E. Witzel, Rahway, and Richard A. Dybas, Somerville, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 23, 1979, Ser. No. 59,812
Int. Cl.³ A01N *21/02*; C07D *239/42*
U.S. Cl. 424—251 **20 Claims**

12. An antimicrobial composition comprising a carrier and an effective antimicrobial amount of a compound of structural formula:



wherein

R is hydrogen, C_{1-5} alkyl or R^2R^3N-;

R^1 is

(1) C_{2-5} alkenyl,

(2) C_{1-3} alkoxycarbonyl-C_{2-5} alkenyl,

(3) C_{1-18} alkyl, or

(4) C_{1-18} alkyl mono-substituted with

(a) hydroxy

(b) C_{1-3} alkoxy

(c) carboxy

(d) C_{1-3} alkoxycarbonyl,

(e) C_{2-5} alkanoyloxy,

(f) C_{3-6} cycloalkyl,

(g) gem-di (C_{1-3} alkoxy),

(h) tetrahydrofuranyl,

(i) hydroxy-C_{1-3} alkoxy, or

(j) C_{2-3} alkanoyl,

R^2, R^3, R^4 and R^5 are independently

(1) hydrogen, or

(2) R^1;

R^6 is

(1) hydrogen,

(2) C_{1-11} alkyl,

(3) C_{1-5} alkoxy-C_{1-11} alkyl,

(4) C_{1-5} alkoxycarbonyl-C_{1-11} alkyl,

(5) C_{1-3} alkylsulfinyl, or

(6) $—(CH_2)_n—$ wherein n is 3 or 4 and the group $—(CH_2)_n—$ is joined to the 5 and 6 carbons of the pyrimidine ring; and

$A^\ominus$ is a non-toxic anion derived from an organic or inorganic acid; with the proviso that;

(1) at least one of R^{1-5} is C_{6-18} alkyl,

(2) at least one of R^{1-5} is oxygen bearing, and

(3) at least one exocyclic nitrogen is a secondary or tertiary amine.

4,339,454

ALKOXYMETHYL AND BENZYLOXYMETHYL PHENOBARBITAL THERAPEUTIC COMPOSITIONS

Carlos M. Samour, Wellesley, Mass., and Julius A. Vida, Greenwich, Conn., assignors to Colgate-Palmolive Company, New York, N.Y.

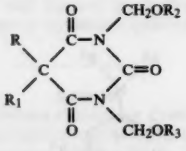
Division of Ser. No. 798,532, May 19, 1977, abandoned, which is a division of Ser. No. 125,813, Mar. 18, 1971, Pat. No. 4,046,894, which is a division of Ser. No. 888,943, Dec. 29, 1969, abandoned, which is a continuation-in-part of Ser. No. 749,972, Aug. 5, 1968, abandoned. This application Aug. 3, 1978, Ser. No. 930,778

The portion of the term of this patent subsequent to Sep. 6, 1994, has been disclaimed.

Int. Cl.³ A61K *31/515*

U.S. Cl. 424—254 **6 Claims**

1. A therapeutic composition in unit dosage form adapted for oral administration for treatment of convulsions in warm-blooded animals comprising a physiologically acceptable carrier and an amount sufficient to produce an anticonvulsant effect of a compound having the structure:



wherein R and R_1 are phenyl and ethyl respectively, or R and R_1 are individually alkyl or alkenyl each having 2 to 5 carbon atoms or cycloalkenyl having 5 to 7 carbon atoms, and wherein R_2 and R_3 are individually alkyl having 1 to 12 carbon atoms or benzyl, each dosage unit containing from about 5 to 500 mg. of said compound.

4,339,455

1-(3-PYRIDYL)-2,2,2-TRIHALOETHYL COMPOUNDS AND FUNGICIDAL COMPOSITIONS CONTAINING THE SAME

Fritz Sauter, Vienna, Austria; Otto Eberle, Ottobrunn, Fed. Rep. of Germany; Beate Süss, Munich, Fed. Rep. of Germany, and Rudolf Weissgerber, Munich, Fed. Rep. of Germany, assignors to Consortium für Elektrochemische Industrie GmbH, Munich, Fed. Rep. of Germany

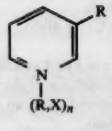
Division of Ser. No. 863,980, Dec. 23, 1977, Pat. No. 4,189,486. This application Jul. 17, 1979, Ser. No. 58,350

Claims priority, application Fed. Rep. of Germany, Dec. 28, 1976, 2659117

Int. Cl.³ A01N *43/40*; C07D *211/84*

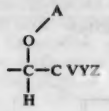
U.S. Cl. 424—263 **12 Claims**

1. A 1-(3-pyridyl)-2,2,2-trihaloethyl compound of the formula I



I

in which n is 0 or 1, R represents methyl and X is iodide, R′ represents a radical of the formula II



II

wherein V,Y and Z each represent a chlorine or bromine atom, A represents a radical of the general formula III

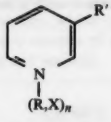
III

in which B′ is oxygen or sulphur and B stands for a member of the group consisting of an aliphatic radical having from 1–10 C-atoms of the group consisting of alkenyl radicals and alkyl radicals of the branched and straight chain type, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of lower alkoxy, lower alkanoyl, lower alkyl ester, COOH, halogen, lower alkyl, halo lower alkyl, nitro and hydroxyl groups, an aralkyl radical having from 7–12 C-atoms and an amino group of the general formula IV

IV

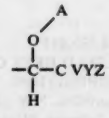
in which F and D are identical or different, and represent a member of the group consisting of hydrogen, aliphatic radicals of the branched or straight chain type and having from 1–10 C-atoms, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of alkyl, alkenyl, nitro, alkoxy, halogen and haloalkyl, and aralkyl radicals having from 7–12 C-atoms, A also representing a sulphonyl group of the general formula $—SO_2—B$, in which B has the same meaning as in formula III.

3. A fungicidal composition containing an effective amount as active agent comprising 0.01 to 95% by weight of an 1-(3-pyridyl)-2,2,2-trihaloethyl compound of the formula I



I

in which n is 0 or 1, R represents methyl and X is iodide, R′ represents a radical of the formula II



II

wherein V,Y and Z each represent a chlorine or bromine atom, A represents a radical of the general formula III

III

in which B′ is oxygen or sulphur and B stands for a member of the group consisting of an aliphatic radical having from 1–10 C-atoms of the group consisting of alkenyl radicals and alkyl

radicals of the branched and straight chain type, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of lower alkoxy, lower alkanoyl, lower alkyl ester, COOH, halogen, lower alkyl, halo lower alkyl, nitro and hydroxy groups, an aralkyl radical having from 7–12 C-atoms and an amino group of the general formula IV

IV

in which F and D are identical or different, and represent a member of the group consisting of hydrogen, aliphatic radicals of the branched or straight chain type and having from 1–10 C-atoms, the phenyl radical, a substituted phenyl radical containing at least one substituent selected from the group consisting of lower alkyl, lower alkenyl, nitro, lower alkoxy, halogen and haloloweralkyl, and aralkyl radicals having from 7–12 C-atoms, A also representing a sulphonyl group of the general formula $—SO_2—B$, in which B has the same meaning as in formula III and a suitable carrier.

4,339,456

PEANUT SEED TREATING

Kyle W. Rushing, Plano, Tex., assignor to Gustafson, Inc., Dallas, Tex.

Filed Jan. 14, 1980, Ser. No. 111,726
Int. Cl.³ A01N *43/36*
U.S. Cl. 424—274 **7 Claims**

1. A method of treatment of peanut seeds which comprises applying to said peanut seeds a colloidal suspension including oil as a base and a micronized, seed-treating active chemical carried by the oil in the suspension, wherein said suspension is applied to the peanut seeds at a rate in the range of 6 to 16 fluid ounces per hundred weight of said peanut seeds and allowing the treated peanut seeds to dry with the result that the coating including the active chemical remains on the seeds thereby minimizing chemical dust and related environmental and physical problems.

7. A method of treating peanut seeds having a testa remaining on the cotyledon which comprises applying to substantially the entire periphery of the peanut seeds a colloidal suspension of a micronized seed-treating active fungicide in an oil carrier at a rate in the range of 12 to 16 ounces of colloidal suspension per hundred weight of peanut seeds, and allowing the treated peanut seeds to dry thereby providing a peanut seed with a dry coating covering the entire outer surface of the testa and extending into any wrinkles of the testa and at least partially penetrating the testa.

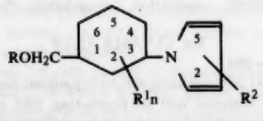
4,339,457

3-(PYRROL-1-YL)PHENYLMETHYL ESTERS AND INTERMEDIATES

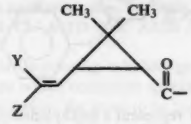
Ernest L. Plummer, North Tonawanda, N.Y., and Raymond M. Palmere, West Orange, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Oct. 20, 1980, Ser. No. 198,409
Int. Cl.³ C07D *207/327*; A01N *43/36*
U.S. Cl. 424—274 **12 Claims**

1. A compound of the formula



in which R^1 is halogen or lower alkyl, n is 0, 1 or 2, R^2 is hydrogen or 2,5-dimethyl and R is 2,2,3,3-tetramethylcyclopropylcarbonyl, 1-(4-chlorophenyl)-2-methylpropyl-1-carbonyl, 1-(4-ethoxyphenyl)-2,2-dichlorocyclopropylcarbonyl, or a cyclopropanecarboxylic acid residue of the formula



wherein Y and Z are independently halogen, lower alkyl, perhaloalkyl of 1 or 2 carbon atoms, or are joined to form a cyclopentylidene group.

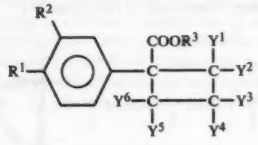
4,339,458

INSECTICIDAL ESTERS

George Holan, Brighton, and David F. O'Keefe, Mount Waverley, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

Division of Ser. No. 969,862, Dec. 12, 1978, Pat. No. 4,235,926.
This application May 8, 1980, Ser. No. 147,728
Claims priority, application Australia, Dec. 19, 1977, PD2818
Int. Cl.³ A01N *43/16*
U.S. Cl. 424—282 **12 Claims**

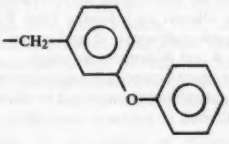
1. The (+), (−) and (±) forms of the compounds of the formula I



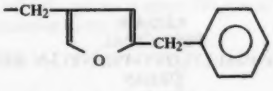
I

wherein R^3 is one of the following groups (a), (b), (d) or (e)

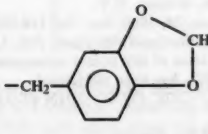
(a)



(b)



(d)



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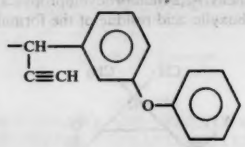
(e)



R^1 and R^2 together represent a methylenedioxy group or if R^3 is the group (d) R^1 also represents hydrogen or a methoxy, ethoxy, propoxy, butoxy, tetrafluoroethoxy, methylthio, ethylthio, propylthio, fluoro, chloro, bromo, methyl, ethyl, or nitro group, and R^2 represents hydrogen or a methyl group; and Y^1, Y^2, Y^3, Y^4, Y^5 and Y^6 are the same or different groups and each is hydrogen or a fluoro, bromo or chloro group, with the proviso that one of Y^1 to Y^6 is other than hydrogen.

8. Insecticidal compositions comprising an insecticidally effective amount of one or more of the compounds of formula I, as stated in claim 1, where R^3 is one of the groups (a), (b), (d) and (e), incorporated in a suitable inert liquid or solid carrier.

4,339,459

GUANIDINIUM COMPOUNDS AND THEIR USE AS MICROBIOCIDAL AGENTS

Helmut Diery, Kelkheim; Wolfgang Wagemann, Tremsbüttel; Hans-Walter Bücking, Kelkheim; Martin Hille, Liederbach, and Karl H. Wallhäusser, Hofheim am Taunus, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 15, 1980, Ser. No. 216,164

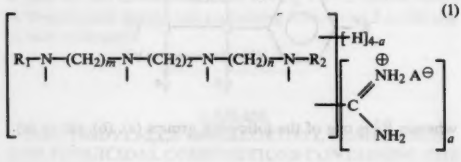
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1979, 2952167

Int. Cl.³ A61K *31/205;* **C07C** *129/12*

U.S. Cl. 424—316 **2 Claims**

1. A guanidinium compound of the formula I

(I)



in which R_1 and R_2 are identical or different and denote alkyl, 2-hydroxyalkyl or alkenyl each having from 8 to 18 carbon atoms, or C_8–C_{18}-alkoxylpropyl, m and n are 2 or 3, a is a number from 1 to 4 and A denotes an anion.

2. Microbiocidal agent comprising a solution containing 5 to 70% percent of a guanidinium compound as claimed in claim 1 in water, lower alkanols or mixtures thereof.

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PESTICIDAL N-[4-(3'-BROMOALLYLOXY)-PHENYL]-N'-BENZOYL UREAS

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 24, 1980, Ser. No. 114,935

Claims priority, application Switzerland, Feb. 1, 1979, 982/79

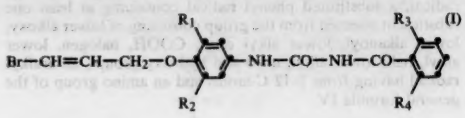
The portion of the term of this patent subsequent to Jul. 24, 1996, has been disclaimed.

Int. Cl.³ C07C *127/22;* **A01N** *47/34*

U.S. Cl. 424—322 **8 Claims**

1. A compound of the formula I

(I)



wherein

R_1 and R_2 independently of one another are each hydrogen, chlorine or bromine,

R_3 is fluorine or chlorine, and

R_4 is hydrogen, fluorine or chlorine.

8. A method for combatting insects which comprises applying to said insects or to a locus desired to be protected from said insects, an insecticidally effecitive amount of a compound according to claims **1**, **2**, **3**, **4**, **5** or **6**.

4,339,461

N-SUBSTITUTED 3-NITRO-BENZYLAMINES

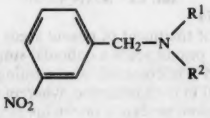
William F. King, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Dec. 29, 1980, Ser. No. 221,169

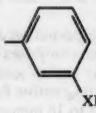
Int. Cl.³ A61K *31/135*

U.S. Cl. 424—330 **10 Claims**

1. A compound of the formula



wherein R^1 and R^2 are both propyl or R^1 is the group



wherein X is —S— or —SO_2— and R is alkyl of 1 to 4 carbon atoms; and R^2 is hydrogen or —SO_2R wherein R is defined as hereinabove, provided that when X is —S—, R^2 is not hydrogen.

5. A fungicidal composition comprising a biologically inert carrier and a fungicidally effective amount of a compound defined in claim **1**.

4,339,462

ANTIMICROBIAL 3-HYDROXYDIPHENYL ETHERS

Rene' Muntwyler, Hofstetten, and Kurt Burdeska, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 960,697, Nov. 14, 1978, Pat. No. 4,268,693.

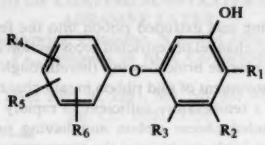
This application Dec. 8, 1980, Ser. No. 214,295

Claims priority, application Luxembourg, Nov. 21, 1977, 78554

Int. Cl.³ A61K *31/09*

U.S. Cl. 424—341 **12 Claims**

1. A method of combating micro-organisms on or in organic or inorganic material and of protecting said material from micro-organisms, which comprises incorporating in said material or applying to the surface thereof a microbiocidally effective amount of at least one compound of the formula



wherein R_1 represents hydrogen, fluorine or chlorine, each of R_2 and R_3 independently represents hydrogen or chlorine, and each of R_4, R_5 and R_6 independently represents hydrogen, fluorine, chlorine or bromine, with the proviso that each phenyl nucleus contains at least one halogen atom, but the total number of halogen atoms in the molecule does not exceed 4.

4,339,463

ENTEROSOLUBLE HARD-CAPSULATED MEDICAMENTS

Yasushi Takagishi, Nishinomiya; Yoshio Doi, Ibaraki, and Noboru Hoshi, Kigashi-Kurume, all of Japan, assignors to Shionogi & Co., Ltd., Osaka and Shin-Etsu Chemical Co., Ltd., Tokyo, both of, Japan

Filed Jul. 16, 1980, Ser. No. 169,395

Claims priority, application Japan, Aug. 24, 1979, 54-108447

Int. Cl.³ A61K *9/48, 47/00*

U.S. Cl. 424—35 **2 Claims**

1. A weighted, enterosoluble, mixed acidic succinyl and aliphatic monoacyl ester of an alkyl and hydroxylalkyl substituted cellulose ether coated and sealed hard gelatin coated two-piece capsule shell-encapsulated medicament suspended in a material selected from the group consisting of sesame oil, olive oil, soybean oil, rapeseed oil, cottonseed oil, linseed oil, castor oil, rice-bran oil, camellia oil, coconut oil, peanut oil, corn oil, poppy oil, cacao butter, cinnamon butter, laurin, beef tallow, hog fat, wool fat, products obtained from said oils and fats by hydrogenation, carboxylic acidic exchange or acetylation splitting and esters of glycerine with a carboxylic acid having from 6 to 30 carbon atoms in a molecule; said capsule having the usual semi-spherical cap ends of the capsule shells flattened so that the effective volume of the capsule is reduced and being weighted with a material selected from the group consisting of barium sulfate, calcium dihydrogenphosphate, iron oxide, titanium dioxide, calcium sulfate, and platinum, either in the capsule shell or in the capsule fill and having an overall specific gravity of at least 1.05.

4,339,464

STABILIZER PRODUCING *STREPTOCOCCUS THERMOPHILUS*

Ebenezer R. Vedamuthu, Bradenton, Fla., assignor to Microlife Technics, Inc., Sarasota, Fla.

Filed Feb. 24, 1978, Ser. No. 880,969

Int. Cl.³ A23C *9/12, 9/123;* C12N *1/20;* C12R *1/46*

U.S. Cl. 426—43 **17 Claims**

8. A bacterial concentrate which produces a stabilizer when incubated in milk to produce a naturally stabilized fermented milk product having a smooth, silky, viscous body at room temperature, which comprises:

at least about 10^8 cells per ml of *Streptococcus thermophilus* NRRL-B-11,238 which has been grown in a growth medium containing milk solids or derivatives thereof which cause the bacteria to form the stabilizer when incubated in milk and which concentrate is in a form which provides for storage and shipment of the cells.

4,339,465

METHOD OF DE-PANNING BAKED GOODS

Oran L. Strouss, Carson, Calif.

Continuation-in-part of Ser. No. 85,127, Oct. 15, 1979, abandoned. This application Sep. 26, 1980, Ser. No. 191,278

Int. Cl.³ A21D *8/08;* A23D *5/00*

U.S. Cl. 426—293 **14 Claims**

6. A method of de-panning a baked good from a pan in which it was baked which comprises spraying a liquid composition onto the pan before the good to be baked is placed in the pan or before said good is fully proofed, said liquid composition comprising an effective amount to effect de-panning of a liquid emulsifier containing from about 4 to about 9 percent monoglycerides and diglycerides derived from animal fats and/or vegetable oils based on the total weight of the liquid composition and from about 2 to about 7 percent of an ethoxylated fatty acid ester of sorbitol by weight of the liquid composition, said emulsifier having a melting point of about 45° F., from about 0 to about 4 percent lecithin by weight of the liquid composition and from about 80 percent to about 95 percent water based on the total weight of the liquid composition.

4,339,466

ANTI-FOAMING AGENT FROM MALT

George E. A. Van Gheluwe, Longueuil; Robert L. Weaver; Miroslav Dadic, both of Montreal, all of Canada, and Finn B. Knudsen, Hellerup, Denmark, assignors to The Molson Companies, Limited, Rexdale, Canada

Continuation-in-part of Ser. No. 10,059, Feb. 7, 1979, abandoned. This application Aug. 26, 1980, Ser. No. 182,022

Int. Cl.³ A23L *1/28;* C12C *11/04;* C12B *1/18*

U.S. Cl. 426—430 **7 Claims**

1. A process for producing an agent for reducing foaming during fermentation comprising the steps of grinding malt; extracting the ground malt thus produced with a hot ethanol solution having an ethanol concentration in excess of 75% to yield extracted ground malt and an ethanolic extract; separating said ethanolic extract from ground malt remaining therein; and concentrating said ethanolic extract to yield said antifoaming agent.

4,339,467

FLAVORING WITH METHYL SUBSTITUTED OXOBICYCLO-4,4,0-DECANE DERIVATIVES

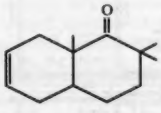
Takao Yoshida, West Long Branch, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 182,451, Aug. 28, 1980, Pat. No. 4,320,776. This application Jun. 25, 1981, Ser. No. 277,130

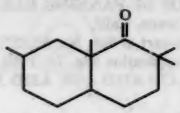
Int. Cl.³ A23L *1/226*

U.S. Cl. 426—538 **4 Claims**

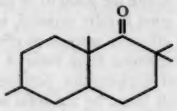
1. A process for augmenting or enhancing the peppery aroma or taste of a foodstuff comprising the step of adding to said foodstuff 0.01 ppm up to about 100 ppm of the compound defined according to the structure:



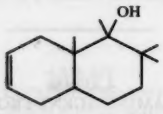
2. A process for augmenting or enhancing the peppery aroma or taste of a foodstuff comprising the step of adding to said foodstuff 0.01 ppm up to about 100 ppm of a mixture of compounds defined according to the structures:



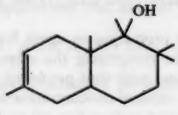
and



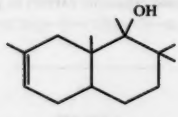
3. A process for augmenting or enhancing the walnut aroma or taste of a foodstuff comprising the steps of adding to said foodstuff 0.01 ppm up to about 100 ppm of the compound defined according to the structure:



4. A process for augmenting or enhancing the walnut aroma or taste of a foodstuff comprising the step of adding to said foodstuff 0.01 ppm up to about 100 ppm of a mixture of compounds defined according to the structures:



and

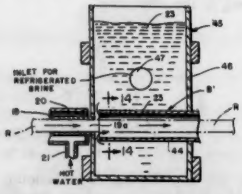


4,339,468

METHOD OF PREPARING PASTA FILATA CHEESE FOR BRINING AND CUTTING

Lester O. Kielsmeier, Lakewood, Colo., assignor to Leprino Foods Company, Denver, Colo.

Filed Dec. 29, 1980, Ser. No. 221,331
Int. Cl.³ A23C *19/00*
U.S. Cl. 426—582 **9 Claims**



1. The method of preparing pasta filata cheese for brining and cutting, comprising:

(a) extruding mixed warm pasta filata cheese in a continuous ribbon;

(b) projecting said extruded ribbon into the feed end of an elongated channel of restricted cross section having a cold sodium chloride brine flowing therethrough in the direction of movement of said ribbon in said channel, said brine being at a temperature sufficient to rapidly chill and set the extruded cheese ribbon and having predetermined density and velocity to assist the movement of said ribbon through said channel from said feed end to an outer discharge end; and

(c) continuously mechanically removing the outer end of said ribbon from said discharge end of said channel for cutting and brining.

4,339,469

METHOD OF MAKING POTASSIUM, CESIUM, RUBIDIUM, ANTIMONY PHOTOCATHODE

Arthur F. McDonie, Lancaster, and William K. Miller, Manheim, both of Pa., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 98,698, Nov. 29, 1979, abandoned. This application Jul. 17, 1981, Ser. No. 284,258
Int. Cl.³ B05D *1/34, 1/38, 3/02*
U.S. Cl. 427—10 **5 Claims**

EVAPORATION OF ANTIMONY FILM ON SUPPORT
OXIDATION OF ANTIMONY FILM
EVAPORATION OF ANTIMONY FILM ON OXIDIZED ANTIMONY
DEPOSITION OF RUBIDIUM, POTASSIUM AND CESIUM FILM ON ANTIMONY
BAKING OF SURFACE AT 150°C TO 162°C

1. A method of making a photocathode including the steps of:

(a) forming a base layer comprising antimony and oxygen on a substrate,

(b) evaporating potassium, cesium and rubidium from at least one container onto the base layer, said base layer being maintained at room temperature during said evaporation, and

(c) sensitizing said photocathode by baking said substrate at a temperature between 150° to 162° C. until the photocathode sensitivity reaches a maximum value.

4,339,470

FABRICATING AMORPHOUS SILICON SOLAR CELLS BY VARYING THE TEMPERATURE OF THE SUBSTRATE DURING DEPOSITION OF THE AMORPHOUS SILICON LAYER

David E. Carlson, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

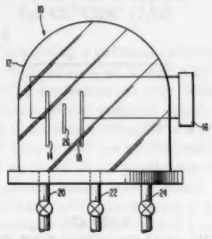
Filed Feb. 13, 1981, Ser. No. 234,567
Int. Cl.³ H01L *31/18*
U.S. Cl. 427—39 **7 Claims**

1. In an improved method for fabricating amorphous silicon solar cells of the type comprising an amorphous silicon layer deposited on a substrate, the improvement comprising varying the temperature of the substrate during the deposition of the amorphous silicon layer such that the temperature is lowest during the deposition of the portion of the amorphous silicon layer which will receive incident light.

4,339,471
METHOD OF COATING SUBSTRATES WITH AN ABRASIVE LAYER

Grzegorz Kaganowicz, Princeton, N.J., and John W. Robinson, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,505
Int. Cl.³ B05D 3/06
U.S. Cl. 427—40 6 Claims

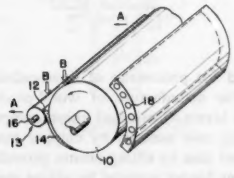


1. A method for preparing an abrasive silicon oxide coating on a substrate comprising:
(a) placing said substrate in a vacuum chamber between two electrodes;
(b) forming a glow discharge in said chamber in the presence of silane and N_2O, thereby depositing a SiO_x coating, wherein x is a number from 1–2, on said substrate;
(c) removing silane from said chamber;
(d) exposing said coating to oxygen; and
(e) repeating step (b) to deposit an additional layer of silicon oxide on said substrate.

4,339,472
METHOD FOR FABRICATING GRAVURE PRINTING CYLINDERS WITH SYNTHETIC RESIN SURFACE

Eiichi Tachibana, Funabashi, and Shinichi Hikosaka, Musashino, both of Japan, assignors to Dai Nippon Insatsu Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 18, 1980, Ser. No. 170,156
Claims priority, application Japan, Jul. 27, 1979, 54-95734
Int. Cl.³ B05D 1/40, 3/06
U.S. Cl. 427—44 6 Claims



1. A method of fabricating gravure printing cylinders with a printing surface made of synthetic resin, said cylinders having superior engraving properties including obviating use of a burr-cutter after engraving, smooth surface, solvent resistance and wear resistance, the method comprising the steps of:
(a) applying spirally a photosetting polyamide resin solution prepared by dissolving a polyamide, a photopolymerizable monomer and a photopolymerization initiator in an alcohol, said solution being capable of being applied on said cylinder by the blade coating method, having a viscosity of 10–100 cps at 25° C., and said solution being applied as successively overlaid layers on the surface of a cylindrical base, as said base is rotated, for forming an endless photosetting polyamide resin layer;
(b) drying the applied photosetting polyamide resin solution substantially fully during the application of each layer while the base makes one turn;
(c) irradiating said resin layers with ultraviolet rays, electron rays, or the like for setting the layer; and
(d) engraving the resin layer surface thus set for forming gravure cells.

4,339,473
GAMMA RADIATION GRAFTING PROCESS FOR PREPARING SEPARATOR MEMBRANES FOR ELECTROCHEMICAL CELLS

Vincent F. D'Agostino, Huntington, and Joseph Y. Lee, Lake Grove, both of N.Y., assignors to Rai Research Corporation, Hauppauge, N.Y.

Filed Aug. 28, 1980, Ser. No. 182,135
Int. Cl.³ B05D 3/06
U.S. Cl. 427—44 16 Claims

1. A process for the preparation of a separator membrane suitable for use in electrochemical cells comprising the steps of:
(a) forming a graft polymerization medium consisting substantially of water, from about 0.5 to about 25 weight percent of one or more ethylenically unsaturated hydrophilic monomers and one or more polymerization retardants selected from the group consisting of water soluble cupric salts, ferrous salts or mixtures thereof, in an amount sufficient to retard the polymerization of said monomers;
(b) placing said medium in contact with an inert polymeric base film; and
(c) irradiating said film while in contact with said medium with sufficient radiation to graft polymerize said monomers onto said film, wherein all weight percents are based on the total weight of the medium.

4,339,474
COATING COMPOSITION AND PROCESS FOR PREPARING SYNTHETIC RESIN SHAPED ARTICLES BY USING SAME

Kazuo Kishida; Isao Sasaki; Kenji Kushi, and Misao Tamura, all of Otake, Japan, assignors to Mitsubishi Rayon Company, Ltd., Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,202
Claims priority, application Japan, Mar. 4, 1980, 55-27088; Mar. 12, 1980, 55-31017
Int. Cl.³ B05D 3/06; C08F 8/00
U.S. Cl. 427—54.1 19 Claims

10. A process for the preparation of synthetic resin shaped articles excellent in the abrasion resistance and weatherability, which comprises coating the surface of a synthetic resin shaped article with a coating composition, and irradiating the coated shaped article with ultraviolet rays to form on the surface of the synthetic resin shaped article a crosslinked and cured film having a thickness of 1 to 30 microns, wherein said coating composition comprises:
(a) a polyfunctional monomer composition comprising (i) 40% to 100% by weight of a polyfunctional monomer containing at least three methacryloyloxy or acryloyloxy groups in the molecule and having a molecular weight of not higher than approximately 900 and (ii) 0% to 60% by weight of a monofunctional or bifunctional monomer having one or two methacryloyloxy or acryloyloxy groups in the molecule and having a molecular weight of not higher than approximately 300 per methacryloyloxy or acryloyloxy groups,
(b) 5 to 35 parts by weight, based on 100 parts by weight of the polyfunctional monomer composition (a) mentioned above, of at least one ultraviolet absorber,
(c) 0.5 to 8 parts by weight, based on 100 parts by weight of the polyfunctional monomer composition (a) mentioned above, of at least one polymeric material selected from polymers of alkyl methacrylates and alkyl acrylates, and
(d) 0.01 to 6 parts by weight, based on 100 parts by weight of the polyfunctional monomer composition (a) mentioned above, of a photosensitizer.

4,339,475

METHOD OF FORMING A FLUORESCENT SCREEN FOR CATHODE-RAY TUBE

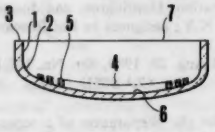
Misturu Hinosugi, and Kouichi Nakasato, both of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 20, 1980, Ser. No. 132,398

Claims priority, application Japan, Mar. 23, 1979, 54-33302; Mar. 23, 1979, 54-33303

Int. Cl.³ B05D *3/02, 1/38*

U.S. Cl. 427—64 14 Claims



1. A method of forming a fluorescent screen for a cathode ray tube comprising the steps of forming a phosphor layer on the inner surface of a panel, coating the panel inner surface and said phosphor layer with an aqueous emulsion of water insoluble film forming resin in order to form a base layer, forming a metal film upon said base layer, and eliminating organic substances of the base layer coated on the panel inner face by pyrolysis, wherein the pyrolysis temperature of said film-forming resin is not greater than 420° C. and said emulsion is coated while the phosphor layer is still wet to form said base layer.

4,339,476

DISPERSIONS FOR ACTIVATING NON-CONDUCTORS FOR ELECTROLESS PLATING

Nathan Feldstein, 63 Hemlock Cir., Princeton, N.J. 08540

Division of Ser. No. 934,344, Aug. 17, 1978, Pat. No. 4,220,678, which is a division of Ser. No. 830,456, Sep. 6, 1977, abandoned, which is a continuation-in-part of Ser. No. 731,212, Oct. 12, 1976, Pat. No. 4,136,216, which is a division of Ser. No. 607,506, Aug. 26, 1975, Pat. No. 3,993,799, which is a continuation-in-part of Ser. No. 512,224, Oct. 4, 1974, abandoned. This application Aug. 28, 1980, Ser. No. 182,124

The portion of the term of this patent subsequent to Dec. 26, 1995, has been disclaimed.

Int. Cl.³ C23C *3/02*

U.S. Cl. 427—98 27 Claims

1. A process for the electroless or chemical deposition of a non-conductor substrate which comprises

(a) contacting said substrate with a colloidal dispersion of at least one non-precious catalytic metal capable of electroless metal initiation and wherein said colloidal dispersion is derived through the nucleation of a colloidal product with added thermal energy thereby improving the stability and effectiveness for said colloidal product, and

(b) immersing the treated substrate into an electroless plating bath to deposit a metallic layer thereof.

4,339,477

PROCESS FOR PREPARING A PIGMENTED LACQUER

Dietrich J. Bahr, Herrenberg, and Marian Briska, Böblingen, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1981, Ser. No. 244,363

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023700

Int. Cl.³ B41M *3/00;* C09C *1/00*

U.S. Cl. 427—146 5 Claims

1. A process for coating a record carrier, said process comprising the steps of:

(1) coating said record carrier with an aluminum-containing layer;

(2) making a mixture of lacquer and a white pigment which changes to a dark color under the influence of heat, and which has a grain size greater than any other pigment in the mixture; and

(3) applying a layer of said mixture to said record carrier, with the thickness of the mixture layer such that white pigment particles protrude from the surface.

4,339,478

INSTALLATION AND PROCESS FOR PROCESSING OF LIGNO-CELLULOSE FOR THE MANUFACTURE OF WOOD-PRODUCT PLATES

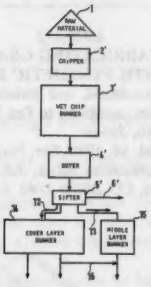
Berndt Greten; Harry Neubauer; Günter Seeger; Günter Bücking; Hans J. Komp, and Wilhelm Oldemeyer, all of Springe, Fed. Rep. of Germany, assignors to Bison-werke Bähre & Greten GmbH & Co. KG, Springe, Fed. Rep. of Germany

Filed Apr. 23, 1980, Ser. No. 143,166

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916541

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—212 3 Claims



1. A method for processing of ligno-cellulose containing particles for the manufacture of wood-product plate type articles having layers of oriented chips, comprising the steps of: comminuting raw material by chipper means; separating fine material and dust by sifting means; providing sifted chips with at least one binder material by gluing means; producing with said chipper means more chips of as great a length as possible than are required for forming of at least one cover layer of a mat; locating wet chip bunker means behind said chipper means and locating dryer means following thereof; separating chips obtained after removal of the fine material and the dust into two fractions by said sifting means, one of said fractions during processing time constantly containing chips which are as long as possible and which are more than that required for forming said mat cover layer, the other one of said fractions having shorter chips obtained during chipping, both fractions being present each in at least one bunker; supplying by feeding means a part of the chips that are as long as possible from said one fraction to the chips of said other fraction, so that resistance against longitudinal bending is uniform in said wood-product plate type articles.

4,339,479

TREATMENT OF CELLULOSE

Edward Robbart, 321 Fairmount Ave., Milton, Mass. 02186

Continuation-in-part of Ser. No. 308,057, Nov. 20, 1972, abandoned, which is a continuation-in-part of Ser. No. 39,538, May 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 522,366, Jan. 24, 1966, abandoned, which is a continuation-in-part of Ser. No. 386,622, Aug. 8, 1973, Pat. No. 3,856,558. This application Dec. 20, 1974, Ser. No. 534,807

The portion of the term of this patent subsequent to Dec. 24, 1991, has been disclaimed.

Int. Cl.³ C23C *11/00*

U.S. Cl. 427—255.1 24 Claims

1. A process for rendering a cellulosic material water repellent by treatment with vapors of lower alkyl silicon halide without the need of a neutralization step while retaining the strength characteristics of the material which consists essentially of contacting in a contact chamber at a contact chamber pressure of about 1 Torr to 16.7 psi a cellulosic material having a water content of up to about 10 weight percent with vapors of a lower alkyl silicon halide which reacts with hydroxyl groups to form a siloxane, said vapors being at a temperature of ambient room temperature to 180° F. and a concentration of about 0.5 volume percent up to the saturation of the contacting atmosphere, and a contact time of from 0.1 second up to 30 minutes, maintaining the concentration of lower alkyl silicon halide in the contacting atmosphere, the temperature of said lower alkyl silicon halide vapor, the pressure within said treating chamber, the temperature of the cellulosic material, and the contact time so that the cellulosic material contacted with the lower alkyl silicon halide is rendered water repellent and has a pH greater than 3.5.

4,339,480

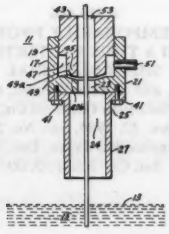
GAS WIPING APPARATUS AND METHOD OF USING

Anthony J. Stavros, and Roger L. Crandall, both of Bethlehem, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Continuation-in-part of Ser. No. 139,606, Apr. 11, 1980. This application Mar. 31, 1981, Ser. No. 249,513

Int. Cl.³ C23C *1/00;* B05C *11/06*

U.S. Cl. 427—349 25 Claims



1. A gas wiping die for wiping linear material after initial passage of such material through a molten metal coating bath, comprising:

(a) a die body having a gas wiping orifice circumferentially surrounding a central throat through which the linear material passes, the gas wiping orifice being positioned from 1 to 15 inches above the surface of the molten metal bath, the throat diameter being from 0.50 to 1.50 inches, and

(b) the gas wiping orifice having

(1) an angle of about 10 to 45 degrees with respect to perpendicular to the surface of linear material passing through the die,

(2) an orifice width of about 0.010 to 0.080 inch, and

(3) substantially parallel side walls at least about 0.25 inch in length.

4,339,481

PROCESS AND APPARATUS FOR APPLYING LIQUID TO WEB MATERIAL

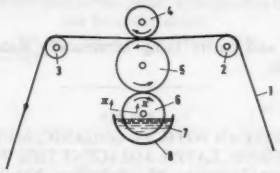
Lambert J. Beekhuis, Mierlo, Netherlands, assignor to Visco B.V., Helmond, Netherlands

Continuation-in-part of Ser. No. 659,143, Feb. 18, 1976, abandoned. This application Apr. 23, 1980, Ser. No. 142,991

Claims priority, application Netherlands, Feb. 18, 1975, 7501900

Int. Cl.³ B05D *1/28*

U.S. Cl. 427—428 4 Claims



1. Apparatus for applying liquid having low viscosity to web material such as textile without the aid of a doctor blade, comprising: a freely rotatable top roller supported from below by engagement with a freely rotatable intermediate roller which forms a nip for receiving an advancing length of the web, said top roller and intermediate roller developing a pressure in said nip which is less then approximately 0.2 kg/cm so that the advancing web rotates said rollers and a freely rotatable applicator roll engaging said intermediate roller from below and supporting said intermediate roller and said top roller whereby said applicator roll is rotated by said intermediate roller, said applicator roll being partially immersed in a bath of the liquid to be applied and having a metal surface provided with cup-shaped recesses.

2. A process for applying liquid having low viscosity to an advancing textile web without the use of a doctor blade, comprising: passing the advancing web through a nip formed between a top freely rotatable roller and an intermediate freely rotatable roller which supports the top roller whereby the advancing web rotates the rollers, the top and intermediate rollers developing a pressure in the nip which is less than approximately 0.2 kg/cm; and transferring liquid from a bath thereof to the intermediate roller in the form of a film thereof by a freely rotatable applicator roller which is partially immersed in the bath, which applicator roller supports the intermediate roller from below so as to be rotated by the intermediate roller and which has a metal surface provided with cup-shaped recesses.

4,339,482

FLAT-PANEL DISPLAY AND METHOD OF MANUFACTURE

David Glaser, Waukegan, and Charles J. Whelchel, Prospect Heights, both of Ill., assignors to Lucitron, Inc., Northbrook, Ill.

Filed Aug. 29, 1980, Ser. No. 182,782

Int. Cl.³ H01J *61/06, 61/30*

U.S. Cl. 428—13 10 Claims

1. A flat-panel display, comprising in combination

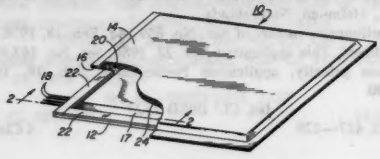
a flat glass pane having a continuous portion surrounding a viewing area,

a display-producing structure positioned adjacent one face of said pane over said viewing area,

an impervious metal flange hermetically sealed to said pane throughout a continuous area surrounding said viewing area, and

an impervious rear sheet having a continuous metallic peripheral portion, said sheet overlying said display-producing structure with said metallic peripheral portion being hermetically sealed to said metal flange to provide be-

tween said glass pane and said rear sheet an enclosed cavity in which said display-producing structure is located, said cavity being hermetically sealed from the ambient.



4,339,483

WELDED CAN WITH AN ORGANIC, METALLIC, ORGANIC LAYER ADJACENT THE WELD

Hiroshi Ueno, Yokosuka; Shunji Kojima, Yokohama; Kazuo Taira, Tokyo; Tadahiko Katsura, Yokohama; Makoto Horiguchi, Fujisawa, and Susumu Takahashi, Yamato, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Jul. 1, 1980, Ser. No. 165,006

Claims priority, application Japan, Jul. 4, 1979, 54/83916

Int. Cl.[3] B65D *7/12, 25/14*

U.S. Cl. 428—35 3 Claims

1. In a welded metallic can having a can body and a joint portion, wherein the interior of the can body is covered at its joint portion with a film of an organic polymeric resin, the improvement wherein said film is a multilayered film having at least two layers of a film of an organic polymeric resin and one layer selected from the group consisting of a metallic foil, an evaporation coated metallic layer and an electroplated metallic layer, the layer adjacent the welded can being one of said layers of a film of an organic polymeric resin, and the layer most spaced away from the welded can being another layer of a film of an organic polymeric resin.

4,339,484

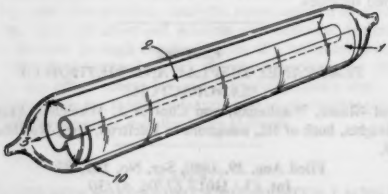
SOLAR COLLECTOR

Geoffrey L. Harding, Sydney, Australia, assignor to University of Sydney, Sydney, Australia

Continuation-in-part of Ser. No. 797,661, May 17, 1977, abandoned. This application Mar. 3, 1980, Ser. No. 126,918

Int. Cl.[3] F24J *3/02*

U.S. Cl. 428—36 11 Claims



1. A solar energy collector element comprising a first glass tube into which a fluid to be heated can be directed, a second glass tube which has an internal diameter which is greater than the external diameter of the first tube and which is located about the first tube, an end-sealed evacuated space defined by the external and internal surfaces respectively of the first and second tubes, and a solar selective surface coating on the external surface of the first tube; the solar selective surface coating comprising a substrate and a composite metal film, the substrate having a thickness of at least 0.05×10^{-6} m. and being composed of a metal which has a relatively low infra-red emittance, and the composite metal film comprising a metal-carbide which has a thickness between 0.04×10^{-6} m. and 0.20×10^{-6} m. and which is deposited on the substrate by a reactive sputtering process.

4,339,485

PRESSURE SENSITIVE ADHESIVE PRODUCTS

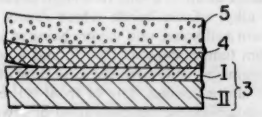
Tomishi Shibano, Tama; Sachio Maruchi, Tokyo; Koji Yakan, Tanashi; Tadashi Kobayashi, Tokyo, and Saburo Akimoto, Yokohama, all of Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Nov. 2, 1979, Ser. No. 90,605

Claims priority, application Japan, Nov. 9, 1978, 53-137350; Dec. 12, 1978, 53-152628; May 18, 1979, 54-60336; May 21, 1979, 54-61513

Int. Cl.[3] A61F *13/02*

U.S. Cl. 428—40 11 Claims



1. Pressure sensitive adhesive products having one or more release layers and a pressure sensitive adhesive layer, in which a release layer comprises a polyolefinic elastomer having a shearing modulus of less than 2.0×10^{8} dyne/cm^2 according to JIS K 7213 test, surface wettability expressed in terms of an equilibrium contact angle for more than 55° with respect to a standard liquid having a surface tension of 50 dyne/cm and used in JIS K 6768 test under the conditions of 20°±1° C. and 65±5% RH and a thickness of at least 1 micron, and a pressure sensitive adhesive layer contains as a main component a polyacrylate, said release layer being kept in contact with said adhesive layer over a given area to form a composite layer or integral thereof.

4,339,486

METHOD FOR TEMPORARILY PROTECTING STICKY SURFACE AND A THUS PROTECTED ADHESIVE SHEET MATERIAL

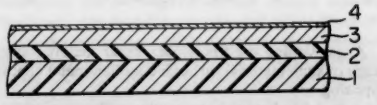
Noboru Shimamoto, and Satoshi Yumoto, both of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1980, Ser. No. 218,944

Claims priority, application Japan, Dec. 28, 1979, 54-173841

Int. Cl.[3] B32B *33/00*

U.S. Cl. 428—40 4 Claims



1. An adhesive sheet material protected from inadvertent sticking which comprises

(a) a substrate sheet,

(b) a sticky layer formed on at least one surface of the substrate sheet with a silicone-based sticking agent, and

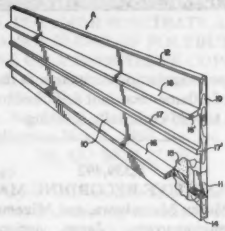
(c) a protecting covering sheet made of a hydrophilic material applied and bonded to the surface of the sticky layer, at least the interfacial layer of the said protecting covering sheet containing 10% by weight or more of water based on the dry weight.

4,339,487

DOOR PANEL AND MANNER OF MAKING SAME

Willis J. Mullet, 1574 Cleveland Rd., Wooster, Ohio 44691

Division of Ser. No. 39,574, May 16, 1979, Pat. No. 4,238,544.
This application Dec. 4, 1980, Ser. No. 212,900
Int. Cl.³ B32B 1/04, 5/20
U.S. Cl. 428—71 22 Claims



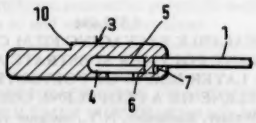
1. An overhead door panel having an inner skin having longitudinal ribs extending in a direction away from the panel and an outer skin forming a cavity between said skins, a rigid core of expanded foam thermal insulating material in said cavity and bonded to the surfaces of the skins, at least the inner skin formed of metal and having contoured side edges for conforming to like edges on like panels, stiles in the cavity extending along the ends of the panel, and means bonding the marginal edges of said outer skin to said contoured edges.

4,339,488

SUPPORT WEB

Manfred Brokmann, Silcherstrasse 5, 4500 Osnabrück, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,818
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1979, 2951329
Int. Cl.³ B32B 3/06, 3/10
U.S. Cl. 428—100 12 Claims



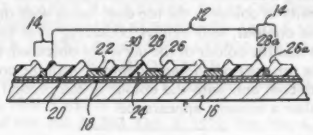
1. A support web comprising a flat band of plastic material having parallel, spaced apart, longitudinally extending reinforcing threads embedded in the band, and, at each end, a connecting member of plastic material formed in one piece about the band end to surround on all sides, a folded end of the band having its layers welded together, there being at least one hole passing through the folded end of the band filled with material of the connecting member, the holes being disposed each between an adjacent pair of the threads.

4,339,489

SIMULATED CERAMIC TILE

John C. Barker, Cowansville, and Ivan P. McLaughlin, Dunham, both of Canada, assignors to J. J. Barker Company Limited, Canada

Division of Ser. No. 52,008, Jun. 25, 1979, abandoned, which is a continuation-in-part of Ser. No. 808,662, Jun. 21, 1977, Pat. No. 4,169,907, which is a continuation-in-part of Ser. No. 550,875, Feb. 19, 1975, abandoned. This application Dec. 4, 1980, Ser. No. 213,019
Claims priority, application Canada, Nov. 15, 1974, 213914
The portion of the term of this patent subsequent to Oct. 2, 1996, has been disclaimed.
Int. Cl.³ B32B 3/30; B41M 3/00
U.S. Cl. 428—167 17 Claims



1. A method of forming a panel defining a plurality of decorative simulated ceramic tiles comprising:

(a) scoring a flat surface of a substrate to form a plurality of grooves defining a plurality of rectangular areas,

(b) applying to the grooved surface a coating of a urethane-forming composition,

(c) rapidly curing the wet coating in the presence of a vapour phase catalyst such that a continuous urethane coating is formed on the grooved surface without exposure of the surface at the upper wall of the grooves and with retention of unfilled grooves to provide a coloured, printable base,

(d) printing on said printable base a layer of ink lines of a coloured ink containing an amount of an organic silicone oil which is sufficient to repel a liquid top coat composition of a resinous, film-forming material in a volatile organic vehicle which contains from 0.75 to 2% of a colouring pigment based on the weight of the top coat composition, without deleteriously affecting the adherence of a top coat formed from said top coat composition; said ink lines defining a plurality of individually complete designs on said base, each of said designs being associated with one of said rectangular area,

(e) applying to said printable base, over said layer of ink lines, a liquid top coat composition of a resinous, film-forming material in a volatile organic vehicle, said top coat composition containing from 0.75% to 2% of a colouring pigment based on the weight of the top coat composition,

(f) allowing said silicone-containing ink to repel said liquid to form ridges of the liquid adjacent the ink lines, and leaving said ink lines clearly visible,

(g) drying and baking the substrate to fix said top coat as a hard, pigment-containing, resinous top coat defining a contour of valleys, hills, and plains, wherein the intensity of colour in the top coat varies with the variation in the contour, said valleys occurring over the ink lines such that the colour of the ink is not obscured; said colour in the top coat providing a contrast with the colour in the undercoat and with the colour in the printed pattern to simulate a ceramic appearance.

17. A simulated ceramic tile produced in a method comprising:

(a) applying to a flat surface of a substrate, an under-coat effective to provide a coloured, printable base,

(b) printing on said printable base a pattern comprised of ink lines of a coloured ink containing an organic silicone oil in an amount which is sufficient to repel a liquid top coat composition of a resinous, film-forming material in a vola-

tile organic vehicle which contains from 0.75% to 2.0% of a colouring pigment based on the weight of the top coat composition, without deleteriously affecting the adherence of a top coat formed from said top coat composition,

(c) applying to said printable base, over said printed pattern, a colouring pigment-containing liquid top coat composition of a resinous, film-forming material in a volatile organic vehicle, said top coat composition containing from 0.75% to 2.0% of colouring pigment based on the weight of top coat composition,

(d) allowing said silicone-containing ink to repel said liquid to form ridges of the liquid adjacent the printed pattern, said printed pattern being clearly visible, and subsequently,

(e) drying and baking the substrate to fix said liquid material as a hard, colouring pigment-containing, resinous top coat defining a contour of valleys, hills and plains, wherein the intensity of colour in the top coat varies with the variation in the contour, said valleys occurring over the ink lines such that the colour of the ink is not obscured; said colour in the top coat providing a contrast with the colour in the under-coat and with the colour in the printed pattern to simulate a ceramic appearance.

4,339,490

FIBER REINFORCED PLASTIC SHEET MOLDING COMPOUND

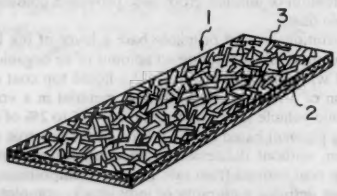
Naonori Yoshioka, Hiroshima; Hisashi Tada, and Setsuo Kashiyama, both of Otake, all of Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,278

Claims priority, application Japan, Sep. 12, 1979, 54/117089

Int. Cl.³ B32B *7/00, 9/04, 27/14*

U.S. Cl. 428—213 **9 Claims**



1. A fiber-reinforced plastic sheet molding compound, comprising:

a first sheet composed of from 30 to 90% by weight of reinforcing fibers and from 70–10% by weight of a matrix resin, said first sheet being formed of remolded rectangular or triangular ribbon shaped chips of a width of at least 1 mm and a length of at least 3 mm, at least one surface of said first sheet being joined with a second sheet composed of the said matrix resin and from 0–30% by weight of reinforcing fibers, said second sheet having a thickness less than that of said first sheet.

4,339,491

PROCESS FOR BONDING WALLPAPERS TO WALL INSULATIONS AND COMPOSITE SHEETING PREPARED IN ACCORDANCE THEREWITH

Uwe Lauterbach, and Wolfgang Michel, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

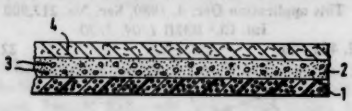
Filed Mar. 12, 1981, Ser. No. 242,822

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1980, 3010047

Int. Cl.³ B32B *3/26, 5/18, 7/12, 9/04*

U.S. Cl. 428—317.7 **5 Claims**

5. A composite sheeting for covering walls, consisting essentially of a base layer of a foamed polystyrene, a layer of adhesive contiguous to said base layer, and a layer of wallpaper contiguous to said adhesive layer, wherein the adhesive layer applied between the base layer and the wallpaper layer consists



essentially of a polysaccharide derivative as the bonding agent and an amount of a flame-retardant sufficient to impart a flame-retardant effect to said composite sheeting.

4,339,492

HEAT-SENSITIVE RECORDING MATERIAL

Hisashi Mino; Masao Matsukawa, and Minematsu Nagashima, all of Higashimatsuyama, Japan, assignors to Sanyo-Kokusaku Pulp Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1980, Ser. No. 156,782

Claims priority, application Japan, Jun. 15, 1979, 54-74567

Int. Cl.³ B41M *5/18*

U.S. Cl. 428—320.4 **1 Claim**

1. A heat-sensitive recording material having a heat-sensitive layer comprising a leuco dye, a phenolic compound and a water-soluble binding agent, wherein said phenolic compound comprises bisphenol A and p-phenylphenol in a ratio by weight between 8:1 and 4:3.

4,339,493

HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND OLEFIN SURFACE LAYER BLEND OF POLYBUTENE-1 AND AN ETHYLENE OR A PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,358, Oct. 5, 1979, Pat. No. 4,275,120. This application Nov. 3, 1980, Ser. No. 202,903

Int. Cl.³ C09J *7/02*

U.S. Cl. 428—349 **4 Claims**

1. A multiple-layer, heat-sealable film comprising;

(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight % of a different compatible polyolefin; and

(b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 10–90 weight percent of poly(1-butene), and 90–10 weight percent of a copolymer of ethylene (2–49 mole percent) and a higher olefin having 4 or more carbon atoms (98–5 mole percent);

in which said different compatible polyolefin in the substrate corresponds to said surface layer blend.

4,339,494

HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND OLEFIN SURFACE LAYER BLEND OF POLYBUTENE-1 AND AN ETHYLENE OR A PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,358, Oct. 5, 1979, Pat. No. 4,275,120. This application Nov. 3, 1980, Ser. No. 202,904

Int. Cl.³ C09J *7/02*

U.S. Cl. 428—349 **4 Claims**

1. A multiple-layer, heat-sealable film comprising;

(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight % of a different compatible polyolefin; and

(b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 10–90 wt. % poly(1-butene), and 90–10 wt. % of a copolymer of ethylene (15–96 wt. %) and propylene (4–85 wt. %);

in which said different compatible polyolefin in the substrate corresponds to the surface layer blend.

4,339,495

HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND OLEFIN SURFACE LAYER BLEND OF POLYBUTENE-1 AND ETHYLENE OR A PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,358, Oct. 5, 1979, Pat. No. 4,275,120. This application Nov. 3, 1980, Ser. No. 202,905

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—349 **4 Claims**

1. A multiple-layer, heat-sealable film comprising

(a) a substrate layer consisting essentially of a homoplymer of polypropylene, a copolymer of polypropylene, in which said homoplymer or copolymer is blended with 1 to 40 percent by weight of a different compatible polyolefin; and

(b) on one of the surfaces of the substrate layer, a surface layer comprising

a blend of 10–90 weight percent of poly(1-butene), and 90–10 weight percent of a copolymer of propylene (2–79 mole percent) and 1-butene (98–21 mole percent), in which said different compatible polyolefin in the substrate corresponds to the blend in the surface layer.

4,339,496

HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF ETHYLENE COPOLYMER AND PROPYLENE COPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,344, Oct. 5, 1979, Pat. No. 4,291,092. This application Nov. 3, 1980, Ser. No. 203,029

The portion of the term of this patent subsequent to Oct. 27, 1998, has been disclaimed.

Int. Cl.³ B32B *27/00*

U.S. Cl. 428—349 **4 Claims**

1. A multiple-layer, heat-sealable film comprising;

(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene which is blended with up to 40 weight & of a different compatible polyolefin; and

(b) on one of the surfaces of the substrate layer, a surface layer comprising a blend of 86–95 wt. % or 5–14 wt. % of a copolymer of ethylene (75–90 mole percent) and a higher olefin having 3 or more carbon atoms (10–25 mole %), and 14–5 wt. % or 95–86 wt. % of a copolymer of propylene (88–98 mole percent) and a higher olefin having 4 or more carbon atoms (2–12 mole %);

in which said different compatible polyolefin in the substrate corresponds to said surface layer blend.

4,339,497

HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF OLEFIN COPOLYMER OR INTERPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,343, Oct. 5, 1980, Pat. No. 4,275,119. This application Nov. 3, 1980, Ser. No. 203,030

Int. Cl.³ C09J *7/02*

U.S. Cl. 428—349 **4 Claims**

1. A multiple-layer, heat-sealable film comprising;

(a) a substrate layer consisting essentially of a homopolymer of propylene or a copolymer of propylene, wherein said homopolymer or copolymer is blended with 1–40% weight of a different compatible polyolefin; and

(b) On one of the surfaces of the substrate layer, a surface layer comprising a copolymer of 50 to 90 mole percent of butene-1 and 10 to 50 mole percent of an alpha-olefin having more than 4 carbon atoms;

in which said different compatible polyolefin in the substrate corresponds to said surface layer copolymer.

4,339,498

HEAT SEALABLE PACKAGING FILM COMPRISING PROPYLENE POLYMER SUBSTRATE AND A SURFACE LAYER BLEND OF OLEFIN COPOLYMER OR INTERPOLYMER

Milton L. Weiner, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 82,343, Oct. 5, 1979, Pat. No. 4,275,119. This application Nov. 3, 1980, Ser. No. 203,031

Int. Cl.³ C09J *7/02*

U.S. Cl. 428—349 **4 Claims**

1. A multiple-layer heat sealable film comprising;

(a) a substrate layer consisting essentially of a homopolymer of polypropylene or a copolymer of polypropylene, wherein said homopolymer or copolymer is blended with 1–40% by weight of a different compatible polyolefin; and

(b) on 1 of the surfaces of the substrate layer, a surface layer comprising an interpolymer of 2–94 mole % of ethylene, 1–93 mole % of propylene and 5–97 mole % of an alpha-olefin having 4 or more carbon atoms;

in which said different compatible polyolefin in the substrate corresponds to the surface layer interpolymer.

4,339,499

STRING OF A SYNTHETIC RESIN

Günther Tappe, Troisdorf-Sieglar; Bertram Gasper, Troisdorf-Spich; Herbert Laubenberger, and Richard Weiss, both of Troisdorf, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Apr. 2, 1980, Ser. No. 136,701

Claims priority, application Fed. Rep. of Germany, Apr. 11, 1979, 2914606

Int. Cl.³ D02G *3/00*

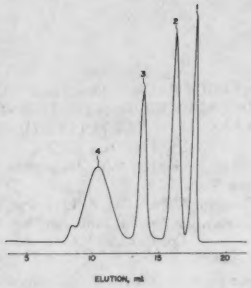
U.S. Cl. 428—373 **12 Claims**

1. A string for the stringing of rackets, bows, musical instruments and the like comprising a thread-like structure comprising at least one polyvinylidene fluoride monofil of a thickness of 1.2 to 1.5 mm, which is stretch oriented to impart improved elasticity thereto and which is provided with a coating consisting essentially of polytetrafluoroethylene or a silicone oil.

4,339,500
HYDROPHILIC PACKING MATERIAL FOR CHROMATOGRAPHY

Yuzo Yanagihara; Kohji Noguchi, both of Yokohama; Hiroshi Suzuki, Yamato, and Makoto Honda, Tokyo, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Oct. 14, 1980, Ser. No. 196,238
Claims priority, application Japan, Nov. 1, 1979, 54-140421
Int. Cl.[3] B32B *3/00*; C08F *226/00*
U.S. Cl. 428—402 14 Claims



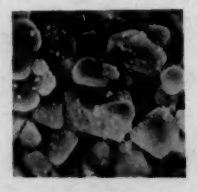
1. A totally porous, hydrophilic packing material for chromatography which comprises grains of a hydroxyl group-containing nonionic and hydrophilic synthetic cross-linked polymer having as a main skeleton a chemical structure including carbon atoms, hydrogen atoms and oxygen atoms bonded through single bonds, which atoms are present in the form of hydroxyl groups, ether groups, carbon-hydrogen bonds and carbon-carbon single bonds exclusive of oxygen-oxygen bonds and 3- or 4- membered rings consisting of carbon and oxygen atoms, said synthetic polymer in dry state having a hydroxyl group density of 1 to 15 milliequivalents/g, a specific surface area of 5 to 1000 m^2/g and a water regain of 0.3 to 3.0 g/g.

2. A packing material according to claim 1, wherein said grains have an average grain diameter of 1 to 2,000 μm.

4,339,501
FILTER-COATED PHOSPHOR

Kiyoshi Inoue, and Minoru Watanabe, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 28, 1980, Ser. No. 116,593
Claims priority, application Japan, Feb. 2, 1979, 54-10353
Int. Cl.[3] H01J *29/26*
U.S. Cl. 428—404 8 Claims



1. A filter-coated phosphor having phosphor particles coated with filter particles of the same color as that of light emitted from said phosphor and secured to said phosphor particle with a bonding agent, the whole surface of each said filter particle being coated with a continuous silica film wherein said film is formed by treating the filter particles with a solution which is obtained by dissolving silica in an organic alkali solution.

4,339,502
TIE-LAYER FOR COEXTRUDED ACRYLONITRILE COPOLYMERS

Frank S. Gerry, Hudson, and Wayne T. Wiggins, Aurora, both of Ohio, assignors to SOHIO, Cleveland, Ohio

Continuation-in-part of Ser. No. 99,113, Nov. 29, 1979, Pat. No. 4,243,725. This application Dec. 24, 1980, Ser. No. 220,217
Int. Cl.[3] B32B *27/28, 27/32*
U.S. Cl. 428—411 13 Claims

1. A laminated structure comprising

(i) a first outer layer comprising a nitrile barrier resin,

(ii) a tie-layer comprising a mixture of (1) a nitrile barrier resin, and (2) a vinyl aromaticdiene block copolymer rubber, and

(iii) a second outer layer comprising a thermoplastic resin.

3. The structure of claim 1 wherein the second outer layer is selected from the group consisting of styrenics, polyolefins, polyurethanes, polyvinyl chlorides, polysulfones, polycarbonates and polyamides.

4,339,503
PROTECTION OF POLYCARBONATE FROM ULTRAVIOLET RADIATION

Thomas G. Rukavina, Lower Burrell, and Harold F. Lewis, Arnold, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Mar. 2, 1981, Ser. No. 239,853
Int. Cl.[3] B32B *27/36*
U.S. Cl. 428—412 10 Claims

1. A method for reducing the ultraviolet radiation degradation of polycarbonate which comprises the steps of:

a. applying a solution consisting essentially of an organic ultraviolet radiation screening compound and tetrabutyltitanate onto a polycarbonate surface; and

b. curing the tetrabutyltitanate to form a hard crosslinked film.

4,339,504
LOW ODOR ELECTROSENSITIVE PAPER

Ray H. Luebbe, Jr., Maitland; Frank Miro, Longwood, and Frank M. Palermiti, Maitland, all of Fla., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Oct. 15, 1980, Ser. No. 197,169
Int. Cl.[3] B32B *23/08*
U.S. Cl. 428—513 28 Claims

1. An electrosensitive, spark discharge recording medium for use with a spark discharge recording apparatus to form optical images thereon in response to pre-selected spark discharge patterns, comprising:

paper;

at least one inner layer disposed over said paper to substantially cover said paper; and

a surface layer substantially covering said inner layer, said surface layer comprising a material which optically contrasts with said inner layer, said material comprising low density polyethylene and at least one pigment; said surface layer being disposed over said inner layer such that portions of said surface layer are selectively removed in response to said spark discharge patterns to expose portions of said at least one inner layer;

said spark discharge recording medium being substantially free of objectionable odors during formation of said optical images.

4,339,505
ELECTROGRAPHIC COATINGS CONTAINING ACRYLAMIDE COPOLYMERS

Frank J. Ragas, Willow Springs; Ralph L. Minnis, Des Plaines, and Gerson E. Beauchamp, Park Ridge, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

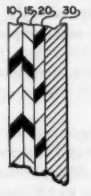
Filed Feb. 25, 1980, Ser. No. 124,111
Int. Cl.³ B32B *23/08*
U.S. Cl. 428—514 **11 Claims**

1. Electrically conductive paper coated with an insulating coating comprising a solvent-soluble copolymer of monoethylenically unsaturated monomers comprising from 5% to 40% of copolymerized acrylamide or a monoethylenic derivative thereof.

4,339,506
DIFFUSION RESISTANT RUBBER LINER AND LAMINATES FORMED THEREFROM

Theodore O. Martin, Jr., Wadsworth, Ohio, assignor to Chloeta F. Martin, Wadsworth, Ohio

Filed Jan. 12, 1981, Ser. No. 224,384
Int. Cl.³ B32B *25/04, 25/14, 25/16*
U.S. Cl. 428—519 **19 Claims**



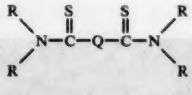
5. A rubber laminate resistant to heat and fluid diffusion, comprising:

a heat resistant rubber layer and a diffusion-resistant rubber layer;

said diffusion-resistant layer comprising a composition having, upon curing, a durometer hardness of from about 15 to about 75 on the Shore D Scale, said composition comprising

(a) about 100 parts by weight of a rubber elastomer selected from the group consisting of (1) natural rubber, (2) a polymer made from diene monomers having from 4 to 12 carbon atoms, (3) a copolymer made from diene monomers having from 4 to 12 carbon atoms,

(4) a copolymer made from vinyl substituted aromatic monomers having from 8 to 12 carbon atoms and diene monomers having from 4 to 12 carbon atoms and (5) combinations thereof (b) from about 1 part to about 4 parts by weight of a thiuram compound having the following formula:



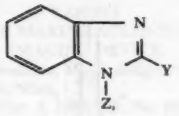
where R is hydrogen or an alkyl group having 1 to 6 carbon atoms and where Q is selected from the group of thioradicals thioradicals consisting of —S—, —S—S—, and combinations thereof;

whereby said composition resists structural cracking under continuous exposure to temperatures above about 180° F.;

said heat resistant layer comprising a blend having less then ten percent (10%) change in percentage elongation after exposure to temperatures of about 212° F. for periods greater than about 70 hours, said blend comprising

(1) about 100 parts by weight of a rubber elastomer selected from the group consisting of (a) natural rubber, (b) a polymer made from diene monomers having from 4 to 12 carbon atoms, (c) a copolymer made from diene monomers having from 4 to 12 carbon atoms, and (d) a copolymer made from vinyl substituted aromatic monomers having from 8 to 12 carbon atoms and diene monomers having from 4 to 12 carbon atoms, (e) homopolymers made from chloro-substituted diene monomers having from 4 to 12 carbon atoms, (f) copolymers made from cyano-substituted olefin monomers having from 2 to 8 carbon atoms and diene monomers having from 4 to 12 carbon atoms; and

(2) about 1 part by weight of a salt of a benzimidazole having the following formula:



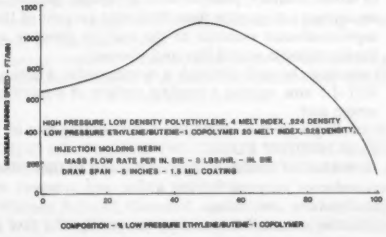
where Y is selected from the group of radicals consisting of hydrogen and mercapto and where Z is selected from the group of radicals consisting of hydrogen and alkyl groups having from 1 to 6 carbon atoms;

whereby said heat resistant layer resists oxidation at elevated temperatures over extended time periods to retain or increase its tensile strength.

4,339,507
LINEAR LOW DENSITY ETHYLENE HYDROCARBON COPOLYMER CONTAINING COMPOSITION FOR EXTRUSION COATING

Stuart J. Kurtz, Martinsville, and Howard G. Apgar, Jr., Bedminster, both of N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 26, 1980, Ser. No. 210,593
Int. Cl.³ B32B *27/32, 27/30;* B29C *19/00;* B29F *3/10*
U.S. Cl. 428—522 **23 Claims**



1. In a process for the extrusion coating of a substrate with a high pressure, low density polyethylene homopolymer or copolymer extrusion coating composition, the improvement which comprises:

using as said composition one comprising more than 20 and less than 98 weight percent of said high pressure, low density polyethylene homopolymer and/or copolymer said homopolymer and copolymer having a density up to about 0.93 and more than 2 and less than 80 weight percent of at least one linear low density ethylene hydrocarbon copolymer said copolymer having a density of about 0.912 to about 0.940.

23. A coated article wherein the coating comprises a blend of more than 20 and less than 98 weight percent of high pressure, low density polyethylene homopolymer and/or copolymer said homopolymer and copolymer having a density up to about 0.93 and more than 2 and less than 80 weight percent of

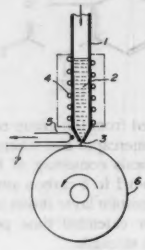
at least one linear, low density ethylene hydrocarbon copolymer said copolymer having a density of about 0.912 to about 0.940; produced as defined in claim 1.

4,339,508

METHOD FOR MANUFACTURING A THIN AND FLEXIBLE RIBBON OF SUPERCONDUCTOR MATERIAL

Noboru Tsuya, and Kenichi Arai, both of Sendai, Japan, assignors to Shiro Maeda, Sendai, Japan

Continuation of Ser. No. 962,602, Nov. 21, 1978, abandoned. This application Jul. 21, 1980, Ser. No. 170,684
Claims priority, application Japan, Nov. 28, 1977, 52/142522
Int. Cl.³ B21C *37/00*; B22D *11/06, 11/10*; H01L *39/24*
U.S. Cl. 428—606 **16 Claims**



1. A thin and flexible ribbon of superconductor material having a fine and compact microscopic structure, processed by:

(a) heating a material consisting essentially of a raw superconductor material selected from the group of intermetallic compounds consisting of Nb-Si, Nb-Sn, Nb-Ge, V-Si, V-Sn, V-Ge, La-Au, and $La_{1-x}(Au_yCu_{1-y})x$, wherein $x>0.9$, $0\leqq y\leqq 1$ to form a uniform melt at a temperature within the range between the melting point of the raw material and 300° C. above the melting point;

(b) adding a glass former selected from the group consisting of boron, bismuth, phosphorous, antimony, gallium, tin, in an amount not greater than 50 atomic percent of the raw superconductor material to the melt to produce a melt having suitable wettability and viscosity;

(c) ejecting the melt through a nozzle under a pressure of 0.01–1.5 atm. against a cooling surface of a moving substrate; and

(d) cooling a jet flow of the melt at a cooling rate of 1,000° C. to 1,000,000° C./sec.

6. A method of manufacturing a thin and flexible ribbon of superconductor material having a fine and compact microscopic structure comprising:

(a) heating a material consisting essentially of a raw superconductor material selected from the group of intermetallic compounds consisting of Nb-Si, Nb-Sn, Nb-Ge, V-Si, V-Sn, V-Ge, La-Au, and $La_{1-x}(Au_yCu_{1-y})x$, wherein $x>0.9$, $0\leqq y\leqq 1$ to form a uniform melt at a temperature of within the range between the melting point of raw material and 300° C. above said melting point to produce a melt having a suitable wettability and viscosity;

(b) adding a glass former selected from the group consisting of boron, bismuth, phosphorous, antimony, gallium, and tin in an amount of not greater than 50 atomic percent of the raw superconductor to the melt;

(c) ejecting the melt through a nozzle under a pressure of 0.01–1.5 atm. against an outer cooling surface of a moving substrate having good wettability for said melt; and

(d) cooling a jet flow of the melt at a cooling rate of 1,000° C. to 1,000,000° C./sec, whereby a flexible ribbon of superconductor material having a microscopic crystalline structure mixed with an amorphous state in a ratio of from about 10 to 90% is produced.

4,339,509

SUPERALLOY COATING COMPOSITION WITH OXIDATION AND/OR SULFIDATION RESISTANCE

Louis E. Dardi, and Srinivasan Shankar, both of Muskegon, Mich., assignors to Howmet Turbine Components Corporation, Greenwich, Conn.

Continuation-in-part of Ser. No. 67,097, Aug. 16, 1979, Pat. No. 4,313,760, which is a continuation-in-part of Ser. No. 43,146, May 29, 1979, abandoned. This application May 1, 1980, Ser. No. 145,460
Int. Cl.³ B32B *15/04*
U.S. Cl. 428—632 **16 Claims**

1. In a superalloy component, the improvement comprising a coating composition on said component consisting essentially by weight of from 5 to 35% cobalt, 10 to 35% chromium, 5 to 15% aluminum, 0.1 to 10% manganese, up to 8% tantalum, up to 5% tungsten, up to 12% silicon, up to 10% hafnium, and the balance nickel.

2. In a superalloy component, the improvement comprising a coating composition on said component consisting essentially by weight of from 15 to 40% chromium, 3 to 13% aluminum, 0.1 to 10% manganese, up to 5% tantalum, up to 2% tungsten, up to 12% silicon, up to 10% hafnium, and the balance cobalt.

4,339,510

ALUMINUM-BASE BRAZING ALLOY COMPOSITE

Masaharu Kaifu; Kazuo Tanaka; Hideo Fujimoto; Jun Takigawa; Tomohiro Nishimura; Yagoro Hirose, and Junu Hirai, all of Shimonoseki, Japan, assignors to Kobe Steel, Ltd., Kobe, Japan

Filed Apr. 29, 1980, Ser. No. 144,892
Claims priority, application Japan, Mar. 28, 1980, 55-40781
Int. Cl.³ B32B *15/20*
U.S. Cl. 428—654 **2 Claims**

1. A brazing material of low susceptivity to intergranular corrosion comprising an aluminum alloy core consisting essentially of 0.003 to 2 wt.% of Cu, 0.01 to 0.08 wt.% of Ti, and the balance of Al, and clad thereupon an aluminum-base brazing alloy.

4,339,511

PREPARATION OF POWDERS SUITABLE FOR CONVERSION TO USEFUL β-ALUMINAS

Peter E. D. Morgan, Thousand Oaks, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 99,237, Nov. 30, 1979, abandoned. This application Apr. 16, 1981, Ser. No. 254,710

Int. Cl.³ C04B *35/44*

U.S. Cl. 429—189 76 Claims

1. A precursor powder which, when suitably pressed and sintered, forms a highly pure monophase, densified β-alumina, which is formed by the steps comprising:

(1) forming a suspension or slurry of Bayer-derived $Al(OH)_3$ in a water-miscible suspending agent;

(2) adding an aqueous solution of a Na compound and either a Li compound or a Mg compound to the Bayer-derived $Al(OH)_3$ suspension while agitating the mixture formed thereby, to produce a gel-like material;

(3) drying said gel-like material at a temperature above the normal boiling point of H_2O to produce a powder material;

(4) lightly ball milling and sieving said powder material;

(5) heating said ball-milled and sieved powder material at a temperature of between 350°-900° C. to form the β''-alumina precursor powder.

4,339,512

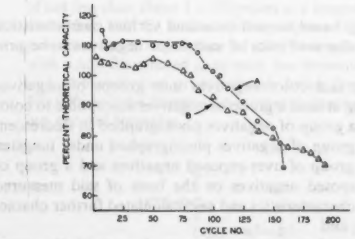
BATTERY HAVING ELECTRODE WITH HYDROPHILIC POLYMER BINDER

Romeo R. Witherspoon, Utica, and Stuart G. Meibuhr, Birmingham, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 131,798, Mar. 19, 1980, abandoned. This application Jan. 12, 1981, Ser. No. 224,379

Int. Cl.³ H01M *6/04*

U.S. Cl. 429—206 5 Claims



1. An alkaline zinc-nickel hydroxide cell comprising in combination a nickel hydroxide electrode, a zinc electrode spaced from said nickel hydroxide electrode and comprising a conductive grid embedded in zinc rich particles and sufficient hydrophilic polyethylene fibers to bind said particles in place on said grid, and an aqueous alkaline electrolyte bridging the space between the electrodes.

4. A zinc electrode adapted for use in an alkaline zinc-nickel hydroxide cell to provide improved cell discharge voltage during prolonged charge/discharge cycling, said electrode comprising an electrically conductive grid embedded in zinc rich particles bound to said grid with hydrophilic polyethylene fibers.

4,339,513

PROCESS AND RECORDING MEDIA FOR CONTINUOUS WAVE FOUR-LEVEL, TWO-PHOTON HOLOGRAPHY

David C. Alvarez, Gilroy; Gary C. Bjorklund, Los Altos, and Donald M. Burland, Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 170,497, Jul. 21, 1980, abandoned. This application Nov. 20, 1980, Ser. No. 208,740

Int. Cl.³ G03C *5/04, 1/76*

U.S. Cl. 430—1 10 Claims

1. A recording medium for holography, said medium comprising a transparent resin containing from 10^{-5} to 0.1 gram/cc of a tetrazine compound.

4,339,514

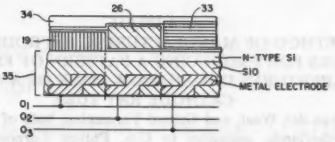
PROCESS FOR MAKING SOLID-STATE COLOR IMAGING DEVICE

Conrad H. Biber, Needham, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Nov. 3, 1980, Ser. No. 202,945

Int. Cl.³ G03F *7/02*

U.S. Cl. 430—7 10 Claims



1. In a process for making a color imaging device, said color imaging device comprising an array of charge-handling semiconductive photosensors with an array of color filter elements superimposed in micro-registration with the sensing area of said photosensors, the process comprising the steps of:

(1) successively coating on an array of semiconductive photosensors a plurality of photoresponsive layers;

(2) subjecting each photoresponsive layer in succession to active radiation whereby to provide an exposed area of that particular layer;

(3) removing unexposed photoresponsive coating of each layer in succession; and

(4) dyeing exposed areas of each layer of said coating in succession to obtain a series of chromatic filter elements.

4,339,515

METHOD OF STABILIZING COLOR PHOTOGRAPHIC MATERIALS AND A COLOR PHOTOGRAPHIC MATERIAL

Karl-Wilhelm Schranz, Odenthal, and Johannes Sobel, Leverkusen, both of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

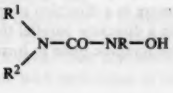
Filed Sep. 4, 1980, Ser. No. 184,034

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1979, 2936410

Int. Cl.³ G03C *7/00*

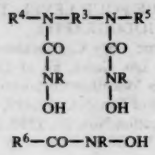
U.S. Cl. 430—17 3 Claims

1. A process of stabilizing a photographic material containing a support layer, at least one hydrophilic layer of binder and at least one dye image by development of an exposed light-sensitive colour photographic material and treatment in an after-treatment bath, wherein the aftertreatment bath contains a water-soluble compound corresponding to at least one of the following compounds I, II or III:



I

-continued



II

III

in which

R represents hydrogen or alkyl

R^1 represents hydrogen or alkyl

R^2 represents alkyl, cycloalkyl, aralkyl or aryl;

R^3 represents a divalent hydrocarbon group;

R^4 and R^5, which may be the same or different, represent hydrogen or alkyl

R^6 represents alkyl, cycloalkyl, aralkyl or aryl and/or

R^1 and R^2 together represent the atoms required to complete a heterocyclic ring and/or

R^3 together with R^4 and optionally also with R^5 represent the atoms required to complete a heterocyclic ring.

4,339,516

METHOD OF MANUFACTURING REPRODUCTION MASKS FOR PRODUCING A PATTERN OF ELONGATE APERTURES IN A SHADOW MASK OF A COLOR CATHODE RAY TUBE

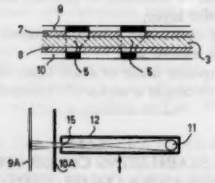
Jan van der Waal, and Gerard Vermeulen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 691,468, Jun. 1, 1976, abandoned, which is a continuation of Ser. No. 557,273, Mar. 11, 1975, abandoned. This application Jan. 25, 1978, Ser. No. 872,170

Claims priority, application Netherlands, Mar. 28, 1974, 7404209

Int. Cl.³ G03C *5/00*

U.S. Cl. 430—24 **6 Claims**



1. A method of manufacturing a reproduction mask used in the manufacture of a pattern of elongated apertures in a shadow mask of a color cathode ray tube, said apertures being wider on one side of said shadow mask than on the other side thereof, said method comprising the steps of: arranging a first reproduction mask having a pattern of transparent and opaque areas corresponding to the pattern of said apertures on said other side of said shadow mask and a photographic plate generally parallel to each other and spaced a predetermined distance apart; exposing said photographic plate through said first reproduction mask to light rays having substantially greater divergence in a first plane perpendicular to the long dimension of areas on said first reproduction mask corresponding to said apertures than in a second plane parallel to said long dimension to project on said photographic plate images of said areas which are magnified more in a direction perpendicular to said long dimension than in a direction parallel thereto; and developing the exposed photographic plate to form a second reproduction mask.

4,339,517

COLOR CORRECTION METHOD FOR COLOR NEGATIVE

Taizo Akimoto, Minami-ashigara, Japan, assignor to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

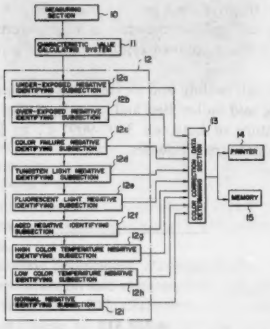
PCT No. PCT/JP79/00214, § 371 Date Apr. 15, 1980, § 102(e) Date Apr. 15, 1980, PCT Pub. No. WO80/00500, PCT Pub. Date Mar. 20, 1980

PCT Filed Aug. 15, 1979, Ser. No. 196,082

Claims priority, application Japan, Aug. 16, 1978, 53/99912

Int. Cl.³ G03C *5/04*

U.S. Cl. 430—30 **10 Claims**



1. A color correction method for a color printing system, comprising the steps of:

measuring various characteristics of color negatives to be printed;

calculating, based on said measured various characteristics, further characteristics of said color negatives to be provided;

classifying said color negatives into groups of negatives including at least a group of negatives susceptible to color failure, a group of negatives photographed in fluorescent light, a group of negatives photographed under tungsten light, a group of over-exposed negatives and a group of under-exposed negatives on the basis of said measured various characteristics and said calculated further characteristics; and

conducting color correction in accordance with the group to which each said negative to be printed belongs;

wherein said various measured characteristics include the large area transmission density, the red, green and blue large area transmission densities, and the red, green and blue densities of the maximum density point, and wherein said calculated further characteristics include the area ratios of particular colors, the average hue of the points determined to have flesh color under daylight, the average hue of the points determined to have flesh color under fluorescent light, and the average hue of the points determined to have flesh color under tungsten light; and

wherein the manner of said color correction is predetermined with respect to the groups of negatives.

4,339,518

PROCESS OF ELECTROSTATIC PRINTING WITH FLUORINATED POLYMER TONER ADDITIVE

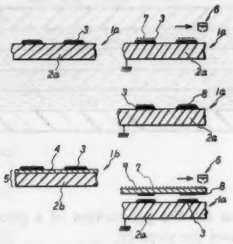
Kazuo Okamura, Itami; Shigeo Daimon, Osaka, and Nobuyuki Tomihashi, Takatsuki, all of Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 8, 1980, Ser. No. 195,076

Claims priority, application Japan, Oct. 18, 1979, 54-135657; Oct. 23, 1979, 54-137422

Int. Cl.³ G03G *13/16, 13/22*

U.S. Cl. 430—126 **1 Claim**



1. A process of electrostatic printing which comprises the steps of:

(1) forming a reverse image of a dielectric toner on an electroconductive support or a photoconductive support and fixing the reverse image to give an electrostatic printing master sheet, and

(2) repeating electrostatic printing procedures of:

(a) electrifying the dielectric toner image of the master sheet,

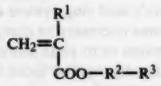
(b) developing the image with a toner,

(c) transferring the resultant toner image to a material to be printed and

(d) fixing the transferred toner image thereon,

said dielectric toner having a volume intrinsic resistivity of not less than 10^{12} Ωcm. and showing a critical surface tension of not more than 30 dynes/cm. after fixing, and containing at least 0.5% by weight of a fluorine-containing resin calculated as fluorine,

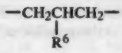
wherein said fluorine-containing resin has a melting point or softening point of not less than 60° C. and a melt viscosity of not less than about 5×10^4 poises at a temperature of not more than 180° C., and is a homopolymer of a fluorinated monomer or a copolymer of the fluorinated monomer with a non-fluorinated monomer, the molecular weight of said homopolymer or copolymer being from 10,000 to 500,000, and the fluorinated monomer having the following general formula:



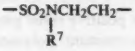
wherein R^1 is hydrogen, methyl, ethyl or propyl; R^2 is the group

wherein l is an integer of 1 to 3, the group

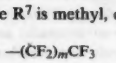
wherein R^4 and R^5 are independently hydrogen, methyl, ethyl or propyl, provided that R^4 and R^5 are not simultaneously hydrogen, the group



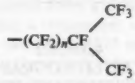
wherein R^6 is hydroxyl group or acetoxyl group, or the group



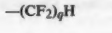
where R^7 is methyl, ethyl or propyl; and R^3 is the group



where m is 0 or an integer of 1 to 18, the group



where n is 0 or an integer of 1 to 18, the group



where q is an integer of 2 to 6, or the group $-CF_2CFHCF_3$.

4,339,519

HUMIDITY RESISTANT PHOTOCONDUCTIVE PLATE CONTAINING TREATED CDSSE

Mike S. H. Chang, Danbury, Conn., assignor to Pitney Bowes, Inc., Stamford, Conn.

Filed Dec. 8, 1980, Ser. No. 214,054

Int. Cl.³ G03G *7/00*

U.S. Cl. 430—135 **14 Claims**

1. A method for increasing the humidity resistance of photoconductive cadmium sulfoselenide comprising the steps of:

(a) soaking cadmium sulfoselenide particles in a solution of vinylidene chloride-acrylonitrile copolymer in an organic solvent;

(b) removing any excessive solution; and

(c) heating said soaked cadmium sulfoselenide particles.

4,339,520

LIGHT-SENSITIVE VESICULAR MATERIAL

Markus Seibel, Mainz; Bernd Huber; Irmgard Bindrum, both of Wiesbaden, and Dieter Bodenheimer, Aarbergen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft

Filed Mar. 31, 1981, Ser. No. 249,436

Claims priority, application Fed. Rep. of Germany, Apr. 16, 1980, 3014538

Int. Cl.³ G03C *1/60, 1/72, 1/76*

U.S. Cl. 430—155 **21 Claims**

1. A light-sensitive vesicular recording material comprising a support and a layer on said support comprising a binder having a light-sensitive compound dispersed therein, said light-sensitive compound decomposing to generate nitrogen gas when exposed to light, and said binder consisting of a material selected from the group consisting of:

(a) a copolymer of methacrylonitrile and vinylidene chloride soluble in butanone, and

(b) a blend of a copolymer of methacrylonitrile and vinylidene chloride soluble in butanone and a copolymer of vinylidene chloride and acrylonitrile, said copolymers being miscible with each other in butanone.

4,339,521

HEAT RESISTANT POSITIVE RESISTS CONTAINING POLYOXAZOLES

Hellmut Ahne, Röttenbach; Eberhard Kühn, Hemhofen, and Roland Rubner, Röttenbach, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 18, 1980, Ser. No. 170,935

Claims priority, application Fed. Rep. of Germany, Aug. 1, 1979, 2931297

Int. Cl.³ G03C 1/68

U.S. Cl. 430—192 7 Claims

1. In a heat-resistant positive resist prepared from precursor stages of highly heat-resistant polymers and light-sensitive diazoquinones, the improvement wherein said resist comprises oligomer and/or polymer precursor stages of polyoxazoles in the form of polycondensation products of aromatic and/or heterocyclic dihydroxydiamino compounds and dicarboxylic acid chlorides or dicarboxylic acid esters as said precursor stages.

4,339,522

ULTRA-VIOLET LITHOGRAPHIC RESIST COMPOSITION AND PROCESS

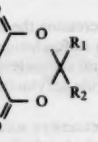
Richard D. Balanson, Morgan Hill; Nicholas J. Clecak; Barbara D. Grant, both of San Jose, and Augustus C. Ouano, Santa Cruz, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 48,940, Jun. 18, 1979, abandoned. This application Oct. 24, 1980, Ser. No. 200,296

Int. Cl.³ G03C 1/54, 5/00, 1/72

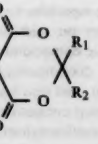
U.S. Cl. 430—192 6 Claims

1. A lithographic resist composition for use with ultraviolet light of less than 3,000 A wavelength, said composition comprising a phenolic-aldehyde resin and in admixture therewith as a deep ultra-violet sensitizer, a sufficient quantity of compound having the formula



wherein R_1 is alkyl or aryl having up to 20 carbon atoms, R_2 is H, alkyl or aryl having up to 20 carbon atoms, or together R_1 and R_2 are cycloalkyl whereby upon exposure to deep ultra-violet radiation, the composition becomes more soluble in alkaline developer.

4. A process for forming a lithographic resist image comprising image-wise exposing to ultra-violet light of less than 3000 A wavelength a film cast on a substrate and comprising a phenolic-aldehyde resin and in admixture therewith a sensitizer having the formula



wherein R_1 is alkyl or aryl having up to 20 carbon atoms, R_2 is H, alkyl or aryl having up to 20 carbon atoms, or together R_1 and R_2 are cycloalkyl, and dissolving the exposed portion of said film with aqueous alkali.

4,339,523

PROCESS FOR PRODUCING PHOTOGRAPHIC IMAGES

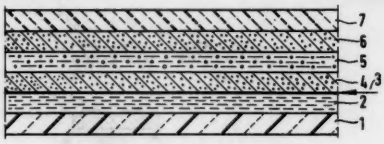
Alexander Psaila, Chelmsford, and Katerina Kessler, Brentwood, both of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 21, 1980, Ser. No. 132,701

Claims priority, application United Kingdom, Mar. 26, 1979, 7910538

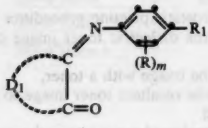
Int. Cl.³ G03C 7/00, 5/54

U.S. Cl. 430—239 53 Claims

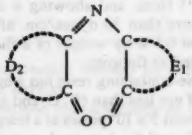


1. A process for the production of a photographic image which comprises the steps of:

(a) imagewise exposing a photographic assembly which comprises at least during a silver halide developing step, in order optionally a supercoat layer, at least one silver halide emulsion layer, a layer containing a layer substantive azamethine compound of the general formula



or



where

R_1 represents unsubstituted or substituted amino or hydroxy, R represents substituent groups which may be the same or different, m is 0 to 3 and D_1 represents the atoms necessary to complete a hydroxypyridone, pyrazolone, barbituric acid or thiobarbituric acid, ninhydrine, oxindole, dimedone or Meldrum's acid ring system and both D_2 and E_1 represent the atoms necessary to complete a bis-hydroxypyridone ring system or to yield murexide, and a support, there being optionally one or more interlayers between each of said components,

(b) treating the exposed photographic assembly with an aqueous acid processing bath so as to provide in the silver halide emulsion layer or layers a solution or dispersion of an azine compound in its reduced form or a metallic ion which is able to act as a silver halide developer in an acid solution thereby to develop the latent silver image in the silver halide emulsion(s) and

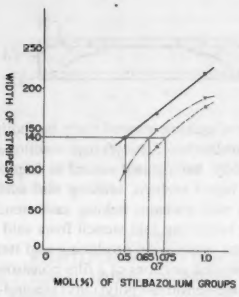
(c) in the non-latent image areas allowing the reduced azine compound or metallic ions to diffuse in a counter-image-wise manner from the silver halide emulsion layer or layers to the layer containing the compound of formula (2) or (14) and there to bleach the compound to form a dye image.

4,339,524

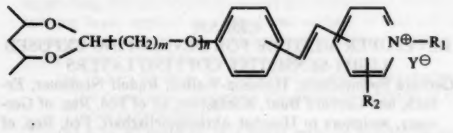
PHOTOSENSITIVE RESINOUS MATERIALS CONTAINING STILBAZOLIUM GROUPS

Kunihiro Ichimura, Yatabe; Osamu Takeuchi, Hino; Hideo Kusama, Yokohama; Kazuo Yamazaki, Kashiwa; Akira Saka, Ichinomiya; Hiroshi Ito, Ohmorinishi, and Kunitaka Toyofuku, Tokyo, all of Japan, assignors to Agency of Industrial Science & Technology Ministry of International Trade and Industry; Sony Corporation and Oji Paper Co., Ltd., all of, Japan

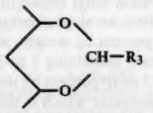
Filed Apr. 14, 1981, Ser. No. 254,062
Claims priority, application Japan, Apr. 17, 1980, 55-51056
Int. Cl.³ G03C 1/68
U.S. Cl. 430—270 21 Claims



1. A partially saponified polyvinyl acetate having at least one stilbazolium group-containing photosensitive unit represented by the following general formula:



(wherein R_1 is hydrogen atom, an unsubstituted or substituted alkyl group, an alkenyl group or an aralkyl group, R_2 is hydrogen atom or an unsubstituted or substituted group, Y is a conjugated base of an inorganic or organic acid, m is an integer of 1 to 6, and n is 0 or 1) and an acetal unit represented by the following general formula:



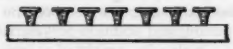
(wherein R_3 is hydrogen atom or an alkyl group); the acetal units being contained therein in an amount of approximately 0.5 to 10.0 mol% with respect to mole of the polyvinylalcohol units thereof; the stilbazolium group-containing units being contained therein in an amount of approximately 0.5 to 5.0 mol% with respect to mole of the polyvinylalcohol units thereof and having a degree of polymerization of approximately 500 to 3,000 and a degree of saponification of approximately 60% or higher.

4,339,525

COLOR PROOFING SYSTEM USING DOT-ETCHABLE PHOTOPOLYMERIZABLE ELEMENTS

Martin D. Bratt, Old Bridge, and Abraham B. Cohen, Springfield, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 49,314, Jun. 18, 1979, Pat. No. 4,229,520, which is a continuation of Ser. No. 741,039, Nov. 11, 1976, abandoned, which is a continuation-in-part of Ser. No. 632,726, Nov. 17, 1975, abandoned. This application Dec. 31, 1979, Ser. No. 108,840
Int. Cl.³ G03C 7/16
U.S. Cl. 430—271 3 Claims



1. A color proofing system which comprises, in combination, at least two dot-etchable masks, in registration with each other, each mask prepared from a different color separation negative and comprising a transparent support bearing a tone correctable image no more than 0.015 mm thick comprised of addition polymerized polymeric dots having a hardened upper skin which rests on a softer undervolume having a lesser degree of polymerization or hardening, said dots having an optical density greater than 3.0 in the 350–400 nm region and being reducible in size by undercutting the polymeric dots with a solvent for the softer undervolume and removal of hardened polymer from the edges of the hardened upper skin by mechanical action on the image bearing surface of the mask, characterized in that each mask has been colored in a spectral region corresponding to the color separation negative from which it was prepared.

4,339,526

ACETYLENE TERMINATED, BRANCHED POLYPHENYLENE RESIST AND PROTECTIVE COATING FOR INTEGRATED CIRCUIT DEVICES

Arnold I. Baise, Poughkeepsie; George Czornyj, Wappingers Falls, both of N.Y., and Anthony W. Wu, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 24, 1981, Ser. No. 276,850
Int. Cl.³ H01L 21/94, 21/312
U.S. Cl. 430—296 3 Claims

1. A process for forming a selectively patterned protective layer on an integrated circuit device by the steps of:

(1) coating an acetylene terminated branched polyphenylene prepolymer material on the device,

(2) patternwise selectively exposing the coating to radiation so as to crosslink the exposed portions,

(3) removing the unexposed portions of the coating with a solvent, and

(4) then heating the coating to form a thermoset cross-linked pattern protective layer.

4,339,527

PROCESS FOR USING PHOTOPOLYMERIZABLE COMPOSITIONS

Martin J. Hill, Sayre, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 8,048, Jan. 31, 1979, Pat. No. 4,230,790, which is a continuation of Ser. No. 802,485, Jun. 1, 1977, abandoned, which is a continuation-in-part of Ser. No. 593,106, Jul. 4, 1975, abandoned. This application Jul. 31, 1980, Ser. No. 174,256
Int. Cl.³ G03C 5/00
U.S. Cl. 430—322 5 Claims

1. A method comprising:

(1) applying to a surface the surface of a solid, unexposed

photopolymerizable layer of a composition consisting essentially of:

(a) a photoinitiator;

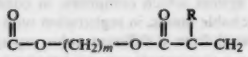
(b) a macromolecular linear organic film-forming polymeric binder; and

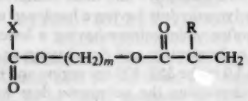
(c) a photopolymerizable monomer, with the following present:

(i) 0.001 to 20 parts by weight, based on the weight of monomer, of nonperoxide photoinitiator, which is activatable by actinic radiation and thermally inactive at and below 85° C.;

(ii) 10 to 95 parts by weight, based on the total weight of the photopolymerizable composition, of binder; and

(iii) 5 to 90 parts by weight, based on the total weight of the photopolymerizable composition of an ethylenically unsaturated addition-polymerizable compound having a molecular weight of at least 150 and a boiling point of above 100° C. and having the formula:





where R = H, CH_3; X =

or $(CH_2)_{n-2}$; and m and n are independently from 2 to 10; while the other surface of the layer has adhered thereto with low to moderate adherence a thin, flexible sheet support, then in either order;

(2) exposing the layer, imagewise, to actinic radiation to form a polymeric image in the layer;

(3) removing the sheet support from the resulting image-bearing layer; and

(4) removing the unexposed areas of the layer to form a resist image of polymeric materials; and

(5) permanently modifying the adjacent areas on said surface which are unprotected by the resist image by using a reagent capable of etching said areas or depositing a material on said areas.

4,339,528

ETCHING METHOD USING A HARDENED PVA STENCIL

Abraham Goldman, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed May 19, 1981, Ser. No. 265,108

Int. Cl.³ C23F 1/02; G03C 5/00

U.S. Cl. 430—323 **10 Claims**

1. In a method of etching a metal body including producing a stencil of a light-hardened poly(vinyl alcohol-acetate) on a surface of said body, baking said stencil to improve the resistance thereof to liquid etchant, etching said surface through said stencil with said etchant, baking said stencil after said etching and then removing said stencil from said surface,

the improvement comprising constituting said stencil by light-hardening selected portions of a film consisting essentially of a dichromate-sensitized poly(vinyl alcohol-acetate) that is about 85% to 97% hydrolyzed and has a molecular weight of about 75,000 to 100,000, and then selectively removing the substantially nonhardened portions of said film.

4,339,529

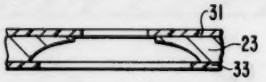
ETCHING METHOD USING A PVA STENCIL CONTAINING N-METHYLOL ACRYLAMIDE

Abraham Goldman, Kendall Park, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 2, 1981, Ser. No. 269,528

Int. Cl.³ C23F 1/02; G03C 5/00

U.S. Cl. 430—323 **10 Claims**



1. In a method of etching a metal body including producing a stencil of a light-hardened poly(vinyl alcohol-acetate) on a surface of said body, baking said stencil to improve the resistance thereof to liquid etchant, etching said surface through said stencil with said etchant, baking said stencil after said etching and then removing said stencil from said surface,

the improvement comprising producing said stencil by light-hardening selected portions of a film consisting essentially of a dichromate-sensitized poly(vinyl alcohol-acetate) that is about 85% to 100% hydrolyzed and about 5 to 30 weight percent with respect to the weight of polyvinyl alcohol-acetate of N-methylol acrylamide, and then selectively removing the substantially nonhardened portions of said film.

4,339,530

DEVELOPER MIXTURE FOR DEVELOPING EXPOSED LIGHT-SENSISTIVE COPYING LAYERS

Gerhard Sprintschnik, Hofheim-Wallau; Rudolf Neubauer, Erbach, and Gerhard Buhr, Königstein, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 14, 1980, Ser. No. 196,279

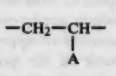
Claims priority, application Fed. Rep. of Germany, Oct. 17, 1979, 2941960

Int. Cl.³ G03C 5/24, 7/02

U.S. Cl. 430—331 **5 Claims**

1. A developer mixture for washing out light-sensitive copying layers previously exposed in imagewise manner and containing a polymer of an N-vinyl amine, of vinyl alcohol or of a vinyl alcohol derivative, an alcohol being water-soluble in an amount less than 10 percent by weight, and water as the main constituent, the mixture containing 1 to 15 percent by weight of said alcohol and 0.5 to 10 percent by weight of said polymer, said polymer is a copolymer which is water-soluble or which can be dispersed in water to form a stable dispersion, composed of

(a) hydrophilic units of the formula I

 I

wherein

A is O-R or

R is a hydrogen atom or a methyl group,

R_1 is a hydrogen atom or an alkyl group having 1 to 5 carbon atoms,

R_2 is an acyl group having 1 to 4 carbon atoms,

a homopolymer of the hydrophilic units being water-soluble, and of

(b) hydrophobic units of vinyl monomers whose homopolymer is water-insoluble and which have an aromatic or a long-chain aliphatic group as the substituent and which are derived from alkyl esters of unsaturated carboxylic acids having alkyl groups with 4 to 30 carbon atoms, from vinyl aromatic compounds or from vinyl esters of aliphatic carboxylic acids having 4 to 30 carbon atoms,

the proportion of the hydrophobic units being sufficient to ensure that an 0.1 percent aqueous solution of said copolymer has a surface tension of not more than 50 mN/m, the quantity of said copolymer being at least sufficient to emulsify any quantity of alcohol exceeding the solubility limit and the upper limit being reached when the viscosity of said developer mixture has a viscosity value of 0.2 cm^2/s at 25° C., measured by the Ubbelohde method.

4,339,531

PHOTOGRAPHIC FILM BASES

Terence D. J. Elmes, Hatfield, and Patrick T. McGrail, Hitchin, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Feb. 24, 1981, Ser. No. 237,775

Claims priority, application United Kingdom, Mar. 12, 1980, 8008392

Int. Cl.³ B32B *27/06*; G03C *1/78*

U.S. Cl. 430—535 **5 Claims**

1. A coated film base suitable for coating with a light-sensitive photographic emulsion layer, said base comprising a self-supporting film of a synthetic linear polyester and a continuous subbing layer applied to at least one surface of said self-supporting film, wherein the subbing layer consists essentially of:

(1) a water-insoluble copolymer of:

(a) 33.3 to 90 mole % of styrene, its molar proportion in the copolymer exceeding the molar proportion of each other comonomer;

(b) 5 to 40 mole % of a butyl ester of acrylic or methacrylic acid;

(c) 5 to 35 mole % of an alkali metal salt of vinyl sulphonic acid, allyl sulphonic acid or methallyl sulphonic acid;

(d) 0 to 10 mole % of acrylic, methacrylic or itaconic acid, a half-ester of itaconic acid, or itaconic anhydride; and

(e) 0 to 25 mole % of glycidyl acrylate or glycidyl methacrylate; and

(2) 0 to 25% by weight, based on the weight of the copolymer, of a cross-linking agent which comprises a condensation product of an amine with formaldehyde.

4,339,532

NOVEL PHOTOSENSITIVE SILVER HALIDE EMULSION AND METHOD OF PREPARING SAME

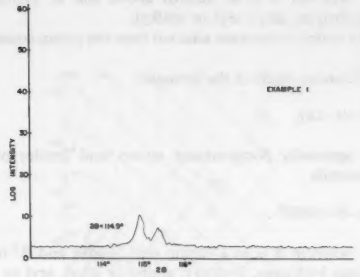
Leo D. Corben, Swampscott, and Martin L. Falxa, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Jan. 8, 1981, Ser. No. 223,478

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—567 **17 Claims**

1. A method for forming a monodisperse, negative-working silver halide emulsion comprising silver chlorobromide or silver iodochlorobromide wherein said grains have a relatively high level of internal disorder in the crystal structure and a uniform habit which comprises precipitating silver halide in the presence of a monodisperse, predominantly silver chloride



seed emulsion having a cubic habit under conditions wherein substantially none of the silver chloride is redissolved and substantially no additional grains are formed.

4,339,533

STABILIZATION OF CREATINE KINASE (CK) AND ITS APPLICATION AS A REFERENCE STANDARD

Douglas K. Chu, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed Jul. 30, 1980, Ser. No. 173,650

Int. Cl.³ C12Q *1/50*

U.S. Cl. 435—17 **27 Claims**

1. A stable intermediate composition for incorporation into a diagnostic reference standard for the assay of creatine kinase (CK) in an aqueous solution sample which consists essentially of human or animal serum or a protein solution selected from bovine or human serum albumin and an effective amount of a stable component consisting essentially of a mixed disulfide or dithiosulfonate derived from creatine kinase.

4,339,534

PROCESS FOR ENZYMATIC PRODUCTION OF PEPTIDES

Jack T. Johansen, Rungsted Kyst, and Fred Widmer, Valby, both of Denmark, assignors to De Forenede Bryggerier A/S, Copenhagen, Denmark

Filed Apr. 2, 1980, Ser. No. 136,661

Claims priority, application Denmark, Apr. 6, 1979, 1443/79

Int. Cl.³ C12P *21/02*

U.S. Cl. 435—70 **13 Claims**

1. A process for producing a peptide of the general formula

A—B

wherein A represents an N-terminal protected amino acid residue or an optionally N-terminal protected peptide residue and B represents an optionally C-terminal protected L-amino acid residue, which comprises:

reacting a substrate component selected from the group consisting of

(a) amino acid esters, peptide esters and depsipeptides of the formula

$A—OR^1$ or $A—SR^1$

wherein A is as defined above and R^1 represents alkyl, aryl, aralkyl or an α-des-amino fragment of an amino acid residue,

(b) optionally N-substituted amino acid amides and peptide amides of the formula

A—NHR[2]

wherein A is as defined above and R^2 represents hydrogen, alkyl, aryl or aralkyl,

with an amine component selected from the group consisting of

(a) L-amino acids of the formula

H—B—OH,

(b) optionally N-substituted amino acid amides of the formula

H—B—NHR[3]

wherein B is an L-amino acid residue and R^3 represents hydrogen, hydroxy, amino or alkyl, aryl or aralkyl, and

(c) amino acid esters of the formula

H—B—OR[4] or H—B—SR[4]

wherein B is an L-amino acid residue and R^4 represents alkyl, aryl and aralkyl,

in the presence of an L-specific serine or thiol carboxypeptidase enzyme from yeast or of animal, vegetable, or microbial origin in an aqueous solution or dispersion having a pH from 5 to 10.5.

4,339,535

PROCESS FOR PREPARING ANTIBIOTIC EM 4940

Richard B. Sykes, Rocky Hill; Jerry S. Wells, Ringoes, and Wen-Chih Liu, Princeton Junction, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 70,287, Aug. 27, 1979, Pat. No. 4,249,008. This application Jun. 30, 1980, Ser. No. 164,220

Int. Cl.[3] C12P *17/18*

U.S. Cl. 435—119 **2 Claims**

1. A process for the preparation of the compound 3,4-dihydro-4-hydroxy-5-(3-hydroxy-2-pyridinyl)-4-methyl-2H-pyrrole-2-carboxamide which comprises cultivating Nocardia sp. 11,340 A.T.C.C. No. 31531 in an aqueous nutrient medium comprising an assimilable carbohydrate and an assimilable nitrogen source under submerged aerobic conditions until substantial antibiotic activity is imparted to the medium.

4,339,536

PROCESS FOR THE PREPARATION OF LONG-CHAIN DICARBOXYLIC ACIDS BY FERMENTATION

Koichi Kato, Hohya, and Namio Uemura, Oga, both of Japan, assignors to Nippon Mining Co., Ltd., Tokyo, Japan

Filed Jun. 3, 1980, Ser. No. 156,117

Claims priority, application Japan, Jun. 8, 1979, 54-72089; Jul. 5, 1979, 54-85330

Int. Cl.[3] C12P *7/44*

U.S. Cl. 435—142 **3 Claims**

1. A process for producing a long-chain dicarboxylic acid which comprises culturing a fungus belonging to *Candida tropicalis* capable of assimilating straight-chain hydrocarbons in a liquid medium containing a straight-chain hydrocarbon as a substrate to obtain a fermentation broth containing a long-chain dicarboxylic acid corresponding to said hydrocarbon, dissolving said dicarboxylic acid in the fermentation broth by adding an alkaline material to said broth, further adding diatomaceous earth to said fermentation broth, filtering it under pressure, precipitating the long-chain dicarboxylic acid in the thus obtained filtrate by heating said filtrate to a temperature above 50° C. while adjusting the pH value of the filtrate to 4 or below by adding a mineral acid to the filtrate, and then separating and collecting the precipitated long-chain dicarboxylic acid.

4,339,537

METHOD OF CULTURING BIOLOGICAL SUBSTANCES

Shinroku Sogi; Masao Izawa, both of Hachioji; Shinichiro Hattori, Tokyo; Ikuo Tawara, Hachioji; Daizo Shinohara, Hachioji, and Sachiko Tachikawa, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Nov. 6, 1979, Ser. No. 91,767

Claims priority, application Japan, Nov. 10, 1978, 53/137786

Int. Cl.[3] C12N *5/00;* C12M *3/04*

U.S. Cl. 435—240 **5 Claims**

1. A method of culturing biological substances capable of propagation in a culture solution, said method comprising culturing the biological substances in a substantially closed culture space formed by a culture vessel containing a plurality of implantation plates which are arranged substantially horizontally and spaced from each other in a vertical direction by the steps of:

(a) introducing a given small amount of biological substances together with a given amount of culture solution into the culture vessel to such a level that a predetermined number of the implantation plates is immersed in the culture solution having the biological substances suspended therein;

(b) propagating the biological substances on the surface of the immersed implantation plates, while an atmosphere inside the culture vessel is controlled in a desired manner;

(c) introducing into the culture vessel an agent which makes it easy to peel the propagated biological substances from the surface of the immersed implantation plates, peeling the biological substances from the plates and then discharging the agent;

(d) introducing a culture solution into the culture vessel to suspend uniformly the peeled biological substances therein;

(e) repeating said steps (b), (c) and (d) in succession, while the propagated biological substances are kept in the culture vessel and the number of implantation plates to be immersed in the culture solution having the biological substances suspended therein is progressively increased by increasing the amount of culture solution introduced into the culture vessel in step (d).

4,339,538

Patent Not Issued For This Number

4,339,539

BIOLOGICALLY PURE CULTURE OF MUTANT MYCOBACTERIUM

Merle G. Wovcha; Candice B. Biggs, both of Kalamazoo, and Thomas R. Pyke, Portage, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 849,526, Nov. 9, 1977, Pat. No. 4,293,645, and a continuation-in-part of Ser. No. 662,563, Mar. 1, 1976, abandoned. This application Sep. 8, 1980, Ser. No. 184,696

Int. Cl.[3] C12N *1/20*

U.S. Cl. 435—253 **1 Claim**

1. A biologically pure culture of mutant *Mycobacterium phlei* NRRL B-8154.

4,339,540

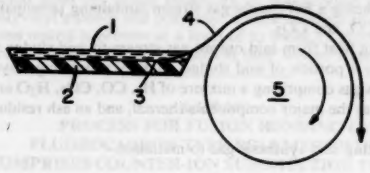
INORGANIC GELS AND CERAMIC PAPERS, FILMS, FIBERS, BOARDS, AND COATING MADE THEREFROM

George H. Beall, Big Flats; David G. Grossman, Corning; Syed N. Hoda, Horseheads, and Karen R. Kubinski, Elmira Heights, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Division of Ser. No. 162,764, Jun. 25, 1980, Pat. No. 4,297,139, which is a division of Ser. No. 23,907, Mar. 26, 1979, Pat. No. 4,239,519. This application Jun. 5, 1981, Ser. No. 270,961

Int. Cl.³ C03C *3/22*

U.S. Cl. 501—3 15 Claims



1. Inorganic papers, fibers, films, and boards containing crystals consisting essentially of a lithium and/or sodium water-swelling mica selected from the group of fluorhectorite, hydroxyl hectorite, boron fluorphlogopite, hydroxyl boron phlogopite, and solid solutions among those and between those and other structurally-compatible species selected from the group of talc, fluortalc, polylithionite, fluorpolylithionite, phlogopite, and fluorphlogopite, at least a substantial proportion of said crystals exhibiting a morphology of a continuum of flakes, rectangular-like strips, and interwoven ribbons in parallel or sub-parallel zones or sheaths with said strips and ribbons being about 0.5–10 microns long, about 500 Å–5000 Å wide, and less than about 100 Å thick, and said flakes being irregularly shaped with diameters between about 0.5–10 microns and cross sections of less than about 100 Å.

4,339,541

MANUFACTURE OF TINTED GLASS

Jacques Dela Ruye, Montignies le Tilleul, Belgium, assignor to BFG Glassgroup, Paris, France

Filed Feb. 26, 1981, Ser. No. 238,504

Claims priority, application United Kingdom, Mar. 4, 1980, 8007370

Int. Cl.³ C03C *3/04, 3/10*

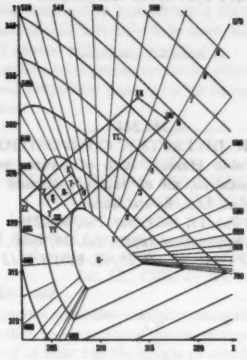
U.S. Cl. 501—71 10 Claims

1. Tinted soda-lime glass containing by weight the following glass forming oxides:

SiO_2	60 to 75%
Na_2O	10 to 20%
CaO	0 to 16%
K_2O	0 to 10%
MgO	0 to 10%
Al_2O_3	0 to 5%
BaO	0 to 2%
BaO + CaO + MgO	10 to 20%
$K_2O + Na_2O$	10 to 20%

wherein such glass also contains the following colouring agents (proportions by weight):

Fe_2O_3	0.3	to	0.5%
Cr_2O_3	0.0075	to	0.0230%
Se	0.0005	to	0.0019%
Co	0.0040	to	0.0070%
Ni	0.0050	to	0.0120%



4,339,542

PLASTIC RAMMING MIX BASED ON MGO

Frederick V. Reven, Homewood, Ill., assignor to Nalco Chemical Company, Oak Brook, Ill.

Filed Aug. 24, 1981, Ser. No. 295,424

Int. Cl.³ C04B *35/04*

U.S. Cl. 501—109 4 Claims

1. A stable storable refractory ramming mix composition comprising in percentages by weight:

(a) 40–98% particulate magnesium oxide
(b) 1–20% alumino-silicate clay
(c) 0.3–4% molasses
(d) 0.5–7.5% alkali metal aluminate
(e) 0.8–27% water.

4,339,543

TEMPERATURE-STABLE DIELECTRIC MATERIAL FOR USE AT VERY HIGH FREQUENCY AND A METHOD OF MANUFACTURE OF SAID MATERIAL

Jean-Claude Mage, and Claude Deljurie, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Feb. 25, 1981, Ser. No. 237,935

Claims priority, application France, Feb. 29, 1980, 80 04601

Int. Cl.³ C04B *35/46*

U.S. Cl. 501—134 8 Claims

1. Dielectric material of the type obtained in accordance with the ceramic production technology, comprising at least one step involving sintering of previously ground raw materials in an oxidizing atmosphere, wherein the relative molar proportions of the raw materials are as follows:

t, TiO_2; x, SnO_2; y, ZrO_2; a, NiO; b, La_2O_3 and c, Fe, in which the parameters t, x, y, a, b and c satisfy the following inequalities:

0.9	≦	t	≦	1.1
0.1	≦	x	≦	0.4
0.6	≦	y	≦	0.9
0.015	≦	a	≦	0.06
0.01	≦	b	≦	0.1
0.001	≦	c	≦	0.01

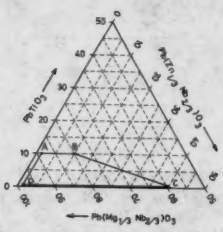
and Fe is present as Fe_2O_3 in the end product.

4,339,544

CERAMIC DIELECTRIC COMPOSITION

Yukio Sakabe; Yukio Hamaji, both of Kyoto, and Hiroshi Komatsu, Nagaokakyo, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 17, 1981, Ser. No. 284,216
Claims priority, application Japan, Jul. 24, 1980, 55-102213
Int. Cl.³ C04B *35/00, 35/46;* H01B *3/12*
U.S. Cl. 501—136 **2 Claims**



1. A ceramic dielectric composition of a ternary system $Pb(Mg_{1/3}Nb_{2/3})O_3$-$Pb(Zn_{1/3}Nb_{2/3})O_3$-$PbTiO_3$, comprising:
68.05–69.60% by weight of Pb_3O_4;
2.41–4.00% by weight of MgO;
0.08–3.15% by weight of ZnO;
24.01–26.66% by weight of Nb_2O_5; and
0.13–2.59% by weight of TiO_2; and
the percentages by weight of said composition, $[Pb(Mg_{1/3}Nb_{2/3})O_3$, $Pb(Zn_{1/3}Nb_{2/3})O_3$, $PbTiO_3]$, falling within the region enclosed by the lines joining four points of A(89.0, 1.0, 10.0), B(80.0, 10.0, 10.0), C(59.5, 40.0, 0.5) and D(98.5, 1.0, 0.5) in a diagram showing the proportions of the ternary system.

4,339,545

ALKANOLS FROM SYNTHESIS GAS

John F. Knifton, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 26, 1981, Ser. No. 277,540
Int. Cl.³ C07C *27/06*
U.S. Cl. 518—700 **24 Claims**

1. A process for making alkanols which comprises contacting a mixture of CO and H_2 at a pressure of 500 psig or greater and at a temperature of at least 180° C. with a catalyst system comprising a ruthenium-containing compound and a material selected from the group consisting of a halogen-free titanium-containing compound and a halogen-free zirconium-containing compound dispersed in a low melting quaternary phosphonium or ammonium base or salt.

4,339,546

PRODUCTION OF METHANOL FROM ORGANIC WASTE MATERIAL BY USE OF PLASMA JET

Leon C. Randalls, New York, N.Y., assignor to Biofuel, Inc., Memphis, Tenn.

Continuation-in-part of Ser. No. 121,441, Feb. 13, 1980, abandoned. This application Mar. 23, 1981, Ser. No. 246,410
Int. Cl.³ C07C *31/04, 27/06*
U.S. Cl. 518—704 **13 Claims**

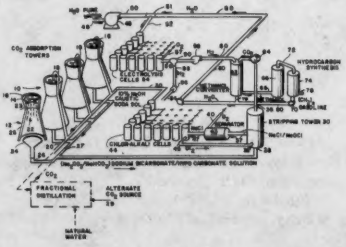
1. The method of producing methanol from organic waste comprising,
digesting the waste to produce a digester gas comprising a mixture of CO_2 and CH_4, and a sludge,
supplying said digester gas into the arc of a plasma jet,
also supplying H_2 and CO gases into said arc, said plasma jet producing a hot output gas stream containing principally H_2, CO, and CO_2,
applying heat from said output gas stream to said sludge to gasify a portion of said sludge, thereby producing a synthesis gas comprising a mixture of H_2, CO, CO_2, H_2O and CH_4 as the major components thereof, and an ash residue, and
converting said synthesis gas to methanol.

4,339,547

PRODUCTION OF SYNTHETIC HYDROCARBONS FROM AIR, WATER AND LOW COST ELECTRICAL POWER

Marshall J. Corbett, East Northport, and Salvatore C. Salina, Bethpage, both of N.Y., assignors to Grumman Aerospace Corporation, Bethpage, N.Y.

Division of Ser. No. 77,880, Sep. 21, 1979, Pat. No. 4,282,187. This application Jul. 9, 1980, Ser. No. 167,075
Int. Cl.³ C07C *29/15, 1/20*
U.S. Cl. 518—728 **7 Claims**



1. A process for manufacturing synthetic hydrocarbons fuels from the synthesis of CO_2 and H_2, the process comprising the steps:
subjecting a NaOH solution to CO_2 present in air, resulting in production of Na_2CO_3 and $NaHCO_3$;
reacting the resulting solution with Cl_2
(a) causing stripping of the CO_2 and
(b) forming brine and NaOCl;
separating the oxygen from the NaOCl whereby additional brine results;
electrolyzing the brine to form H_2, Cl_2 and NaOH;
recycling the resulting Cl_2 for further stripping of CO_2;
recycling the resulting NaOH for further reaction with CO_2;
reacting the stripped CO_2 and the H_2 from the electrolyzed brine to form methanol and water; and
separating the methanol and water thus permitting collection of the methanol.

4,339,548

POROUS CEMENTED ION EXCHANGE RESINS WHEREIN THE BEADS ARE COHERED TO ONE ANOTHER IN POLYMER MATRIX

Akimitsu Miyahara, Tokyo, Japan, assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Sep. 12, 1980, Ser. No. 186,795
Int. Cl.[3] B01J *39/08, 41/08*
U.S. Cl. 521—28 17 Claims

1. Cementitious ion exchange resin particles having an effective diameter of from about 2 to about 50 millimeters comprising organic ion exchange resin beads having an effective diameter of about 0.1 to about 1 millimeter cohered to one another by a crosslinked cementitious matrix derived from an adhesive material containing a hydrophilic functional group and selected from the group consisting of polyacrylate emulsions, polyvinyl alcohol and polyvinyl acetate wherein the cementitious matrix is present at a level of to about 15 grams per 100 grams of on exchange particles in their wetted state.

4,339,549

PROCESS FOR FUSION BONDING OF FLUOROCARBON TYPE POLYMERS WHICH COMPRISES COUNTER-ION SUBSTITUTION PRIOR TO FUSION BONDING

Sakae Tsushima, and Hiroshi Sagami, both of Yokohama, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 29, 1981, Ser. No. 258,637
Claims priority, application Japan, May 9, 1980, 55/60725
Int. Cl.[3] B32B *31/16;* B01J *47/12*
U.S. Cl. 521—28 16 Claims

1. In a process for fusion bonding of two or more of fluorocarbon type polymers to each other, each polymer having at least one pendant cation exchange group selected from sulfonic acid groups and salts thereof, carboxylic acid groups and salts thereof, and sulfonamide groups and salts thereof, the improvement which comprises substituting the counter-ions of the ion-exchange groups in each of said polymers with sulfonium ions and/or phosphonium ions prior to fusion bonding.

4,339,550

FOAM PRODUCTS

Victor Palinczar, Trenton, and Thomas F. Santini, Allentown, both of N.J., assignors to Carter-Wallace, Inc., New York, N.Y.

Filed Jan. 26, 1981, Ser. No. 228,069
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—99 9 Claims

1. Hydrophilic foam compositions characterized by a crosslinked, non-linear molecular network comprising the "in situ" reaction product of:

a. a capped polyoxyethylene polyol having a defined isocyanate functionality of from about 2 to about 8 and which is present in the composition in an amount of from about 5% to about 85% by weight of the total composition;
b. water which is present in an amount of from about 5% to about 75% by weight of the total composition; and
c. from about 0.1% to about 25% by weight of the total composition of a chemically compatible, essentially nonpolar volatile organic compound.

4,339,551

THERMOPLASTIC RESIN FOAM SHEET HAVING IMPROVED HEAT SHRINK CAPABILITY AND THE METHOD FOR ITS PRODUCTION

James E. Heider, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Apr. 10, 1980, Ser. No. 139,086
Int. Cl.[3] B29D *27/00*
U.S. Cl. 521—138 32 Claims

13. As an article of manufacture, a biaxially-oriented heat-shrinkable film or foam sheet having improved heat-shrink capability comprising a first thermoplastic polyolefin film-making base material in major amount and a different second thermoplastic polymeric material having superior infrared radiation absorbing properties in minor amount, said biaxially-oriented film or foam sheet having improved heat-shrink capability, upon subjection to heating including a substantial portion of infrared radiation, said improvement including a reduction in the extent of time and the amount of heat required to heat-shrink said biaxially-oriented film or foam sheet which is less than that required to heat-shrink a biaxially-oriented film or foam sheet of said first polyolefin base material and which is free of said second polymeric material.

20. The article of manufacture in accordance with claim 13 wherein said polyolefin base material comprises low density polyethylene.

4,339,552

VINYL ESTER AQUEOUS ADHESIVE EMULSIONS INCLUDING ACRYLAMIDE

Martin K. Lindemann, Greenville, S.C., assignor to National Starch & Chemical Corporation, Bridgewater, N.J.

Filed Sep. 18, 1978, Ser. No. 943,169
Int. Cl.[3] C08L *29/04*
U.S. Cl. 524—459 5 Claims

1. An aqueous adhesive emulsion comprising water having emulsified therein an aqueous emulsion copolymer consisting essentially of at least 5% by weight of ethylene, from 0.2% to 2.0% by weight of acrylamide, and the balance vinyl acetate, the monomers of said copolymer being emulsified during copolymerization by from 0.5% to 10% of polyvinyl alcohol, and said copolymer having a a T_g above 10° C. and containing in excess of 80% by weight of vinyl acetate.

4,339,553

WATER-BASED FLUOROELASTOMER COATING COMPOSITION

Tastushiro Yoshimura, and Tsutomu Terada, both of Takatsuki, Japan, assignors to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Aug. 14, 1980, Ser. No. 177,941
Claims priority, application Japan, Aug. 14, 1979, 54-103813; Sep. 25, 1979, 54-123621
Int. Cl.[3] C08L *27/16*
U.S. Cl. 524—544 5 Claims

1. A water-based fluoroelastomer coating composition comprising (A) an aqueous fluoroelastomer dispersion blended with (B) an aminosilane compound of the formula:

$$H_2N-X-C_3H_6-\underset{\displaystyle (CH_3)_{3-y}}{\overset{\displaystyle |}{Si}}-(OR)_y$$

wherein R is methyl or ethyl, X is a single bond,

$$+C_2H_4NH+,\ +\underset{\displaystyle O}{\overset{\displaystyle \|}{C}}-NH+ \text{ or } +C_2H_4-NH-C_2H_4-NH+$$

and y is an integer of 2 or 3 optionally with (C) an amine compound having at least one terminal amino group directly bonded to an aliphatic hydrocarbon residue.

4,339,554

POLYVINYL CHLORIDE RESIN BLENDS

Kenneth W. Doak, Murrysville, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 18, 1980, Ser. No. 217,732
Int. Cl.[3] C08L *51/04, 27/06*
U.S. Cl. 525—63 2 Claims

1. A polyvinyl chloride resin blend consisting essentially of a blend of:

(a) from 60–80 percent by weight of a polyvinyl chloride resin, and

(b) from 20–40 percent by weight of a rubber-modified copolymer of (1) a vinyl aromatic monomer, (2) 14–27 percent by weight of maleic anhydride and (3) 5–30 percent of a rubber selected from the group consisting of block copolymer rubbers of styrene and butadiene and epichlorohydrin rubbers, said rubber modified copolymer being obtained by polymerizing components (1) and (2) presence of (3).

4,339,555

PROCESS FOR THE PRODUCTION OF A POLYAMIDE BASE RESIN COMPOSITION

Yasuhiro Ohmura; Seiichiro Maruyama, and Hiroyuki Kawasaki, all of Kitakyushu, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Oct. 24, 1980, Ser. No. 200,579

Claims priority, application Japan, Nov. 21, 1979, 54-151077

Int. Cl.³ C08L 77/00

U.S. Cl. 525—66 **10 Claims**

1. A process for the production of a polyamide based resin composition, comprising:

(a) preparting a modified ethylene copolymer by graft polymerizing from 0.05 to 1.5% by weight of an α, β-unsaturated carboxylic acid or derivative thereof onto an ethylene copolymer prepared by copolymerizing ethylene with an α-olefin of at least three carbon atoms;

(b) melt mixing from 1 to 60 parts by weight of said modified ethylene copolymer with 99 to 40 parts by weight of a polyamide resin; and

(c) subsequently mixing from 0.005 to 5 parts by weight of a urea compound of the formula: R^2—NHCONH—R^1—NHCONH—R^3, wherein R^1 is an aromatic hydrocarbon group and R^2 and R^3 are both aliphatic groups of 8 to 32 carbon atoms, based on 100 parts by weight of said resin composition.

4,339,556

FLAME RETARDANT RESIN COMPOSITIONS

Massimo Baer, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 847,959, Nov. 2, 1977, Pat. No. 4,205,142. This application Dec. 10, 1979, Ser. No. 102,177

Int. Cl.³ C08L 69/00

U.S. Cl. 523—220 **18 Claims**

1. A resin composition comprising:

A. a thermoplastic polycarbonate;

B. an effective amount of a halogenated flame retardant additive; and

C. an effective amount of a flame retardant synergist of average particle size less than about 2 microns, wherein the particles of the synergist are substantially occluded with a non-blocking rubber.

4,339,557

PROCESS FOR PRODUCING PROPYLENE-ETHYLENE BLOCK COPOLYMER

Masayoshi Hasuo, Yokohama; Yoshinori Suga, Machida; Kazuhisa Kojima, Yokohama, and Masatoshi Suzuki, Fujisawa, all of Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,454

Claims priority, application Japan, Oct. 24, 1979, 54-137469

Int. Cl.³ C08F 297/08

U.S. Cl. 525—247 **9 Claims**

1. A process for producing a propylene-ethylene block copolymer in two stages of polymerization in the presence of a catalyst system comprising an organo aluminum compound and a solid titanium trichloride catalyst complex having an atomic ratio of Al to Ti of less than 0.15 and containing a complexing agent, comprising:

(a) a first stage of polymerizing propylene in the presence of liquid propylene and hydrogen, thereby producing a propylene homopolymer having a melt flow index of 1–150 in an amount of 70% to 95% by wt. based on the total amount of block copolymer; and

(b) a second stage of copolymerizing propylene and ethylene at a temperature of 25° C. to 70° C. in the presence of hydrogen and liquid propylene at a concentration of propylene in the vapor phase based on the total amount of propylene and ethylene in the vapor phase of 50–85 mole % and at a concentration of hydrogen in the vapor phase based on the total amount of propylene and ethylene in the vapor phase of 0.5–30 mole %, thereby producing an ethylene-propylene random copolymer having a melt flow index of 10^{-7}–0.1 in an amount of 5–30% by wt. based on the total amount of block copolymer material.

4,339,558

HARDENING RESIN COMPOSITIONS

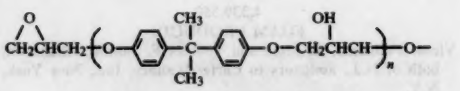
Tamotsu Komura, Nara; Takuji Miyamoto, Suita, and Hiroshi Nakanaga, Kawanishi, all of Japan, assignors to Sankin Industry Co., Ltd., Osaka, Japan

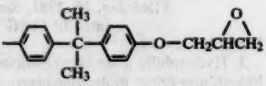
Filed Jun. 3, 1981, Ser. No. 270,027

Int. Cl.³ C08L 63/00

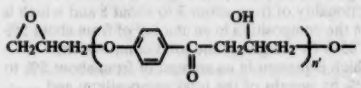
U.S. Cl. 525—524 **4 Claims**

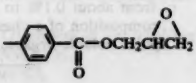
1. Hardening resin compositions, characterized in that they contain a hardening resin base constituted by a mixture of bisphenol A epoxy resin and paraoxybenzoic glycydylester-ether epoxy resin, respectively corresponding to the following formulae (I) and (II):





(in which n = 0 ~ 1)





(in which n' = 0 ~ 1)

in the ratio in weight of 60–40 of the former to 40–60 of the latter and a hardening agent composed of a complex formed by a polybasic carboxylic ester derived from an alcohol having a cyclic ether linkage in its molecule and boron trifluoride in the ratio of 100 parts in weight of the former to 3–7 parts in weight of the latter, the said hardening resin base being mixed with the hardening agent in the ratio in weight of 60–40 of the former to 40–60 of the latter.

4,339,559

POLYMERIZATION USING SILICA FROM SINGLE PHASE CONTROLLED HYDROLYSIS OF SILICATE ESTER

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 151,847, May 21, 1980, Pat. No. 4,301,034.
This application Jul. 31, 1981, Ser. No. 288,839
Int. Cl.³ C08F 4/02, 4/24
U.S. Cl. 526—106 10 Claims

1. A polymerization process comprising contacting at least one mono-1-olefin under polymerization conditions with a catalyst produced by: combining a silicate ester and water under hydrolysis conditions in the presence of a sufficient amount of solvent such that the reaction mixture remains a single phase, after hydrolysis is essentially complete adding more water and maintaining the resulting composition at an elevated temperature to induce particle growth, thereafter adding sufficient acid neutralizing agent to form a gel, and separating water and solvent from the resulting silica, said silica further being characterized by having incorporated therein a chromium compound and by being activated.

8. A polymerization process comprising contacting at least one mono-1-olefin under polymerization conditions with a catalyst produced by: slowly adding a silicate ester and water to a small amount of solvent under hydrolysis conditions such that the water and ester are used up in said hydrolysis about as fast as they are added and alcohol is progressively formed from the hydrolysis, thus serving as additional solvent as progressively more ester and water are added and progressively more hydrolyzed ester is formed, thereafter adding sufficient acid neutralizing agent to form a gel, and separating water and solvent from the resulting gel, said catalyst further being characterized by having incorporated therein a chromium compound and by being activated.

4,339,560

PROCESS FOR POLYMERIZING OLEFINS

Kazuo Baba; Kizuku Wakatsuki, both of Ichihara, and Tadashi Hikasa, Chiba, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 7,844, Jan. 30, 1979, abandoned. This application Jul. 3, 1980, Ser. No. 165,664
Claims priority, application Japan, Feb. 2, 1978, 53/11157
Int. Cl.³ C08F 4/64, 10/00
U.S. Cl. 526—142 12 Claims

1. A catalyst system for the polymerization of olefins consisting essentially of

(A) an organoaluminum compound represented by the formula: $AlR_m^1X_{3-m}^1$ wherein R^1 is a hydrocarbon group having 1 to 8 carbon atoms, X^1 is a halogen atom or an alkoxy group having 1 to 8 carbon atoms and m is a number in the range of 1 to 3, and

(B) a product prepared by reacting a solid organomagnesium halide which is obtained by the reaction of magnesium and a halogenated hydrocarbon compound represented by the formula: R^3X^3 wherein R^3 is a hydrocarbon group having 1 to 20 carbon atoms and X^3 is a halogen atom in an hydrocarbon solvent and has a general formula: $MgR_l^3X_{2-l}^3$ wherein R^3 and X^3 are as defined above and l is a number in the range of $1.25 \geqq l \geqq 0.01$ with an ether selected from the group consisting of diethyl ether, di-n-propyl ether, di-n-butyl ether, di-isoamyl ether, anisole, ethyl phenyl ether, diphenyl ether, tetrahydrofuran and dioxane in a hydrocarbon solvent at 0° C. to 50° C., the molar ratio of ether to solid organomagnesium halide being in the range of 0.01/1 to 10/1, and reacting the thus obtained activated solid organomagnesium halide with a titanium compound selected from the group represented by the formula: $Ti(OR^2)_pX_q^2$ wherein R^2 is a hydrocarbon group having 1 to 8 carbon atoms, X^2 is a halogen atom and p and q are each a number satisfying the following ranges: $0 \leqq p \leqq 4$, $0 \leqq q \leqq 4$ and $p+q=3$ or 4, at a temperature of −60° C. to 200° C., the molar ratio of titanium compound to activated organomagnesium halide being in the range of 0.01/1 to 100/1.

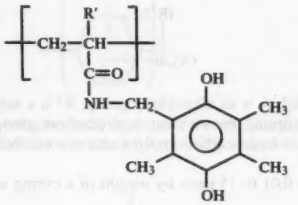
4,339,561

N-(2,5-DIHYDROXY-3,4,6-TRIMETHYL-BENZYL)-ACRYLAMIDE AND - METHACRYLAMIDE POLYMERS

Bernard Jacquet, Antony; Claude Mahieu, Paris, and Christos Papantoniou, Montmorency, all of France, assignors to L'Oreal, Paris, France

Division of Ser. No. 85,399, Oct. 16, 1979, Pat. No. 4,281,192.
This application Mar. 11, 1981, Ser. No. 242,525
Claims priority, application France, Oct. 26, 1978, 78 30461
Int. Cl.³ C08F 20/58
U.S. Cl. 526—304 7 Claims

1. An antioxidant polymer which contains units of the following general formula:



in which: R′ represent a hydrogen atom or a methyl radical.

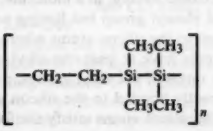
4,339,562

HIGH-MOLECULAR CRYSTALLINE POLYMER WITH ALTERNATING DIMETHYLENE AND METHYL-SUBSTITUTED DISILENE UNITS IN THE MAIN CHAIN AND METHOD FOR PREPARING SAME

Leonid E. Guselnikov, Yasenevo, 4 mikroraion, 6"V", kv. 394; Jury P. Polyakov, Dmitrovskoe shosse, 96, korpus 1, kv. 55, both of Moscow; Elvira A. Volnina, ulitsa Oktyabrskaya, 1, Scherbinka Moskovskoi oblasti, and Nikolai S. Nametkin, Leninsky prospekt, 13, kv. 11, Moscow, all of U.S.S.R.

PCT No. PCT/SU79/00038, § 371 Date Apr. 30, 1980, § 102(e) Date Apr. 30, 1980, PCT Pub. No. WO80/00446, PCT Pub. Date Mar. 20, 1980
PCT Filed Jun. 15, 1979, Ser. No. 195,064
Claims priority, application U.S.S.R., Aug. 30, 1978, 2650452
Int. Cl.³ C08G 77/06
U.S. Cl. 528—14 9 Claims

1. A high-molecular crystalline polymer with alternating dimethylene and methyl-substituted disilene units in the main chain having the general formula:



wherein n is an integer of from 800 to 1,000.

2. A method for preparing a high-molecular crystalline polymer according to claim 1, characterized in that vapours of 1,2-bis-(dimethylchlorosilyl)ethane are reacted with vapours of metallic sodium and/or potassium at a temperature within the range of from 250° to 380° C. under a pressure of vapours of 1,2-bis(dimethylchlorosilyl)ethane of from 0.1 to 10 mm Hg, followed by condensation of vapours of the resulting 1,1,2,2-tetramethyl-1,2-disilacyclobutane and polymerization thereof at a temperature within the range of from 20° to 100° C.

4,339,563

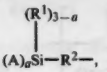
NOVEL ORGANOPOLYSILOXANES AND ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANE COMPOSITIONS CONTAINING THE SAME

Toshio Takago; Masatoshi Arai, and Koji Futatsumori, all of Annaka, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Nov. 24, 1980, Ser. No. 209,492
Claims priority, application Japan, Nov. 30, 1979, 54-155455
Int. Cl.³ C08G 77/06
U.S. Cl. 528—14 10 Claims

1. A room temperature curable organopolysiloxane composition which comprises

(a) 100 parts by weight of an alkenyloxy-containing organopolysiloxane having, in a molecule, at least one alkenyloxysubstituted silylhydrocarbyl group directly bonded to the silicon atom in the siloxane linkage of the organopolysiloxane as represented by the general formula:



in which A is an alkenyloxy group, R^1 is a substituted or unsubstituted monovalent hydrocarbon group, R^2 is a divalent hydrocarbon group and a is a number of 2 or 3, and

(b) from 0.01 to 15 parts by weight of a curing accelerator.

4,339,564

HEAT CURABLE ORGANOPOLYSILOXANE COMPOSITIONS

Yoshio Okamura, Annaka, Japan, assignor to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Sep. 23, 1980, Ser. No. 190,039
Claims priority, application Japan, Sep. 29, 1979, 54-126049
Int. Cl.³ C08G 77/06
U.S. Cl. 528—15 4 Claims

1. A heat curable organopolysiloxane composition which comprises (a) an organopolysiloxane having, in a molecule, each at least one vinyl group, phenyl group and hydrogen atom directly bonded to silicon atoms or a mixture thereof with a second organopolysiloxane having, in a molecule, each at least one vinyl group and phenyl group but having no hydrogen atoms directly bonded to the silicon atoms where each of the organopolysiloxanes may have at least one alkyl group in a molecule and the molar ratios of the vinyl groups, phenyl groups, hydrogen atoms directly bonded to the silicon atoms and, if any, alkyl groups to the silicon atoms satisfy the following relations:

vinyl groups/silicon atoms=0.15 to 0.4;
phenyl groups/silicon atoms=0.4 to 1.1;
silicon-bonded hydrogen atoms/silicon atoms=0.1 to 0.4;
alkyl groups/silicon atoms=0 to 1.65; and
(vinyl groups/silicon atoms)+(phenyl groups/silicon atoms)+(silicon-bonded hydrogen atoms/silicon atoms)+(alkyl groups/silicon atoms)=1.5 to 2.3, (b) a catalyst for the addition reaction between the vinyl groups and the silicon-bonded hydrogen atoms in the component (a), and (c) an organic peroxide.

4,339,565

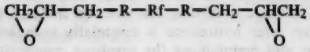
ADHESIVE COMPOSITION FOR FLUORINATED RUBBERS

Masayasu Tomoda, Otsu, Japan, assignor to Daikin Kogyo Co., Ltd., Osaka, Japan

Filed Nov. 28, 1980, Ser. No. 211,388
Claims priority, application Japan, Nov. 30, 1979, 54-156041
Int. Cl.³ C08G 77/04
U.S. Cl. 528—27 3 Claims

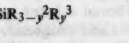
1. An adhesive composition for fluorinated rubbers which comprises;

a fluorine-containing epoxy compound of the formula:



wherein Rf is a fluoroalkylene group having 1 to 18 carbon atoms or a fluorophenylene group, R is a single bond, an alkylene group having 1 or 2 carbon atoms and optionally bearing at least one fluorine atom, an oxyalkylene group having 1 or 2 carbon atoms and optionally bearing at least one fluorine atom or an oxyphenylene group optionally bearing at least one fluorine atom or at least one trifluoromethyl group on the benzene ring; and

a silane compound of the formula:



wherein R^1 is an alkyl or alkenyl group having 1 to 10 carbon atoms, which is optionally substituted with at least one member of the group consisting of chlorine, amino, aminoalkyl, ureido, epoxyoxy, glycidoxy, epoxycyclohexyl, acryloyloxy, methacryloyloxy, mercapto and vinyl, R^2 and R^3 are each chlorine, hydroxyl, C_1–C_{10} alkoxy, C_1–C_5 alkoxy (C_1–C_5) alkoxy, hydroxy (C_2–C_4) alkoxy or C_1–C_5 acyloxy and y is an integer of 0, 1 or 2.

4,339,566

WATER-DISPERSIBLE, RADIATION-CROSSLINKABLE BINDING AGENTS FROM URETHANE ACRYLATES, A PROCESS FOR THEIR PRODUCTION, AND THE USE THEREOF IN AQUEOUS DISPERSIONS IN COLOR PAINTING, COLOR PRINTING, AND TEXTILE APPLICATIONS

Hans J. Rosenkranz, Krefeld; Hellmut Striegler, Leverkusen, and Otto Bendszus, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 2, 1980, Ser. No. 183,076
Claims priority, application Fed. Rep. of Germany, Sep. 6, 1979, 2936039
Int. Cl.³ C08G 18/38
U.S. Cl. 528—68 5 Claims

1. A water-dispersible radiation crosslinkable urethane acrylate binding agent which comprises a reaction product of:

(A) 1 gram equivalent (based on-NCO of a di- or tri-isocyanate;

(B) from 0 to 0.7 gram equivalent OH of a polyol, free of organically bound sulphur;

(C) from 0.1 to 0.7 gram equivalent OH of a hydroxy-(C_2–C_6 alkyl)acrylate; and

(D) from 0.01 to 0.5 gram equivalent NH of an amino sulphonic acid or an alkali metal or an alkaline earth metal salt thereof having from 1 to 4 Amino groups per sulphonic acid group;

the ratio of NCO group: NCO-reactive groups being from 1:1 to 1:1.2.

4,339,567

PHOTOPOLYMERIZATION BY MEANS OF SULPHOXONIUM SALTS

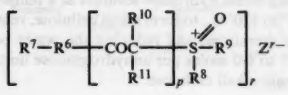
George E. Green, Stapleford, and Edward Irving, Burwell, both of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 23, 1981, Ser. No. 237,184
Claims priority, application United Kingdom, Mar. 7, 1980, 8007893; Jul. 19, 1980, 8023690; Dec. 13, 1980, 8040003
Int. Cl.³ C08F 2/50; B32B 27/16; C08G 65/10
U.S. Cl. 528—102 10 Claims

1. Compositions comprising

(a) a compound, or mixture of compounds, capable of being transformed into a higher-molecular weight material under the influence of a cationic catalyst,

(b) an effective amount of a sulfoxonium salt of the formula



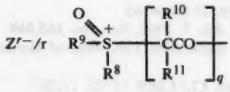
VI

where

p denotes zero or 1,

R^6 denotes an arylene or aralkylene group of 4 to 25 carbon atoms linked directly through a carbon atom thereof to, if p denotes zero, the indicated sulfur atom or, if p denotes 1, to the indicated carbonyl carbon atom,

R^7 denotes a hydrogen atom, or a group of formula



VII

R^8 denotes an alkyl group of 1 to 18 carbon atoms, an alkenyl group of 2 to 6 carbon atoms, a cycloalkyl group of 3 to 6 carbon atoms, a cycloalkylalkyl group of 4 to 8 carbon atoms, an aryl group of 4 to 24 carbon atoms, or an aralkyl group of 5 to 16 carbon atoms,

R^9 has the same meaning as R^8 but may alternatively represent a dialkylamino group of 2 to 6 carbon atoms or, if R^8 denotes a said alkyl group, an arylamino group of 4 to 8 carbon atoms,

R^{10} and R^{11} each independently have the same meaning as R^8 but may also each represent a hydrogen atom,

r represents 1, 2, or 3,

Z^{r-} denotes an r-valent anion of a protic acid, and

q denotes zero when p denotes zero, or zero or 1 when p denotes 1.

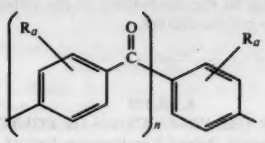
4,339,568

AROMATIC POLYMERS CONTAINING KETONE GROUPS

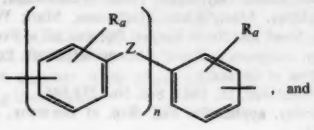
Louis M. Maresca, Belle Mead, N.J., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 3, 1979, Ser. No. 99,582
Int. Cl.³ C08G 8/02, 14/14
U.S. Cl. 528—126 8 Claims

1. A thermoplastic linear terpolymer consisting essentially of recurring units of the formulae:

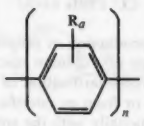


(I)



(II)

, and



(III)

wherein R is independently hydrogen, C_1 to C_6 alkyl, or C_4 to C_8 cycloalkyl, a is an integer of 0 to 4, Z is independently

—SO—, —S—, $—SO_2—$, —O—, alkylene, cycloalkylene, arylene, alkylidene, or cycloalkylidene containing 2 to 20 carbon atoms, with the proviso that Z cannot be

when the connecting ether bonds are in the para position to Z, n is independently an integer of from 1 to 5; said units (I), (II), and (III) being attached to each other by an —O— bond.

4,339,569

PROCESS FOR CONTINUOUS PRODUCTION OF OXYMETHYLENE POLYMER OR COPOLYMER

Akitoshi Sugio, Ohmiya; Akira Amemiya, Tokyo; Tadashi Kunii, Yokkaichi; Tomotaka Furusawa, Matsudo; Mutsuhiko Takeda, Matsudo; Katsumasa Tanaka, Yokkaichi, and Toshikazu Umemura, Tokyo, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Filed May 19, 1980, Ser. No. 150,986
Claims priority, application Japan, May 18, 1979, 54/61106
Int. Cl.³ C08G 2/10
U.S. Cl. 528—240 9 Claims

1. In a process for producing an oxymethylene homopolymer or copolymer having improved stability which comprises polymerizing trioxane or a mixture of trioxane and a cyclic ether and/or a cyclic acetal in bulk in the presence of a catalyst which is at least one compound selected from the group consisting of boron trifluoride, boron trifluoride hydrate and coordination compounds of boron trifluoride with organic compounds containing an oxygen or sulfur atom, the improvement which comprises using as a reactor of the polymerization, a mixer system of the continuously stirred type which includes a material feed opening, a polymer discharge opening and a waste gas discharge opening near the polymer discharge opening with no portion opened into the atmosphere between the material feed opening and the polymer discharge opening except the waste gas discharge opening so that exposure of the bulk polymerization system to the atmosphere is prevented by maintaining the system closed throughout the entire polymeri-

zation process from the feeding of the starting reaction materials into the system to the discharging of the polymer after completion of the polymerization.

4,339,570

PROCESS FOR THE PRODUCTION OF POLYESTERS

Edgar Muschelknautz; Roland Vogelsgesang, both of Leverkusen; Helmut Ohse, Dormagen; Hans Westermann, Marl; Eckhard Möller, Marl; Klaus Hachmann, Marl; Wilhelm Schiemann, Marl, and Bernt Kesper, Dorsten, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 15, 1981, Ser. No. 273,545

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1980, 3025574

Int. Cl.³ C08G *63/02*

U.S. Cl. 528—272 7 Claims

1. A process for the production of polyesters by the introduction on to a first plate of a column reactor of precondensates obtained from a transesterification of dicarboxylic acid dialkyl esters with diols or from an esterification of dicarboxylic acids with diols, optionally with the addition of catalysts, and subsequent condensation in the column reactor, characterised in that spontaneous flash evaporation of the precondensate due to the pressure gradient between the precondensation reactor and the column reactor takes place in a closed chamber, a so-called entry box, before the introduction on to the first plate of the column reactor, and in that separation of the liquid component from the gaseous component is subsequently carried out by centrifugal force in a functionally separated region, a so-called annular chamber.

4,339,571

ONE-COMPONENT SYSTEMS BASED ON CRYSTALLINE EPOXIDE RESINS

Ferdinand Gutekunst, Riehen; Hans Lehmann, Aesch, and Rolf Schmid, Gelterkinden, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 1, 1980, Ser. No. 145,407

Claims priority, application Switzerland, May 8, 1979, 4308/79

Int. Cl.³ C08G *59/24*

U.S. Cl. 528—361 3 Claims

1. A curable, solid, one-component epoxy resin system, which is stable on storage at room temperature, consisting essentially of

(a) a crystalline epoxide resin selected from the group consisting of diglycidyl isophthalate, diglycidyl terephthalate and mixtures thereof, and

(b) 1 to 12% by weight, based on the resin, of a curing catalyst.

4,339,572

FORTIMICIN B DERIVATIVES AND PROCESS FOR PRODUCTION THEREOF

Moriyuki Sato, Machida, and Yasuki Mori, Kawasaki, both of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Division of Ser. No. 836,229, Sep. 23, 1977, Pat. No. 4,220,755. This application Jan. 24, 1980, Ser. No. 114,959

Claims priority, application Japan, Sep. 23, 1976, 51-11430

Int. Cl.³ C07H *15/22*

U.S. Cl. 536—16.1 9 Claims

1. A process for producing 1,2',6'-Tri-N-t-butoxycarbonyl-fortimicin B which consists essentially of reacting fortimicin B with t-butyl-5'-4,6-dimethylpyrimidin-2-ylthiocarbonate in methanolic solution at ambient temperature.

4,339,573

PREPARATION OF CELLULOSE DERIVATIVES USING HIGHLY REACTIVE ALKALI CELLULOSE

Willi Wüst, Ratingen-Hösel; Hasso Leischner; Wilfried Rähse, both of Düsseldorf; Franz-Josef Carduck, and Norbert Kühne, both of Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 165,868

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929002

Int. Cl.³ C08B *1/06, 1/08, 11/02, 11/193*

U.S. Cl. 536—84 16 Claims

1. In the process for the preparation of cellulose derivatives by alkalizing finely divided cellulose to form alkali cellulose, alkylating the alkali cellulose to form alkylated alkali cellulose, and recovering the alkylated alkali cellulose, the improvement which comprises reacting said cellulose with an aqueous-alcoholic alkakli metal hydroxide solution at a temperature of from about 20° to 120° C., to form alkali cellulose, removing all of the oxygen therefrom, and reducing the water content to from about 2.5 to 6.0 moles per anhydroglucose unit, prior to alkylation of said alkali cellulose.

4,339,574

PREPARATION OF ALKYL CELLULOSE

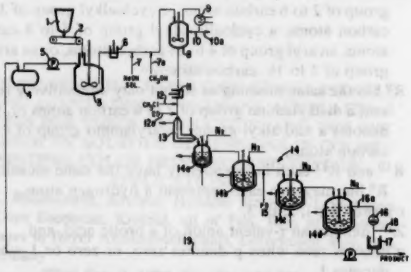
Willi Wüst, Ratingen-Hösel; Hasso Leischner; Wilfried Rähse, both of Düsseldorf; Franz-Josef Carduck, and Norbert Kühne, both of Haan, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen, Fed. Rep. of Germany

Filed Jul. 7, 1980, Ser. No. 165,869

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1979, 2929011

Int. Cl.³ C08B *11/02, 11/08*

U.S. Cl. 536—84 11 Claims



1. A method for the continuous production of alkyl cellulose by reacting alkali cellulose with alkylating agents in the presence of inert liquids, wherein:

(a) powdered cellulose in an inert organic liquid is continuously reacted with aqueous-alcoholic alkali metal hydroxide solution at temperatures of from about 20° to 80° C. to form alkali cellulose;

(b) oxygen is continuously completely removed from the alkali cellulose reaction mixture of step (a) and the water content is continuously reduced to from about 2.5 to 6.0 moles per anhydroglucose unit; and

(c) the reaction mixture from step (b) is reacted with at least a stoichiometric amount, but not more than with a molar excess of up to about 50%, based on the alkali metal hydroxide, of an alkylating agent in an inert liquid boiling at a temperature of from about 80° to 160° C., the reaction being carried out continuously in a cascade of stirred tanks-in-series with 2 to 10 units.

4,339,575

SUBSTITUTED-IMIDAZOLIDINYL-3-CHLORO-3-CEPHEM-4-CARBOXYLIC ACID

Yoshinobu Ko'Oka, Miki; Mariko Munekage, Amagasaki, and Hitoshi Minato, Toyonaka, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

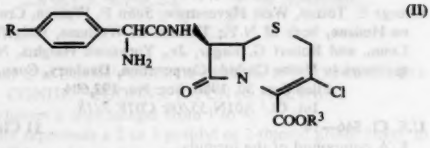
Continuation of Ser. No. 12,551, Feb. 15, 1979, abandoned. This application May 14, 1980, Ser. No. 149,836

Claims priority, application Japan, Jul. 23, 1978, 53-20675

Int. Cl.³ C07D *501/12*

U.S. Cl. 544—20 2 Claims

1. A method for purifying a compound of the formula:



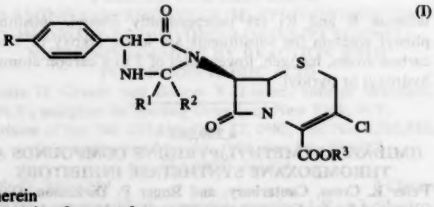
(II)

wherein

R is hydrogen or hydroxy, and R^3 is hydrogen or an organic or inorganic base group forming a pharmaceutically acceptable carboxylate salt group,

which comprises treating compound (II) with a ketone or aldehyde of the formula:

wherein R^1 and R^2, independently of each other, are hydrogen; alkyl of 1–4 carbon atoms; phenethyl; or benzyl, phenyl or thienyl optionally substituted by alkyl of 1–3 carbon atoms, alkoxy of 1–3 carbon atoms or halogen; or when taken together, R^1 and R^2 represent alkylene optionally having oxygen, sulfur or imino in its skeleton, to produce a compound of the formula:



(I)

wherein

R, R^1, R^2, and R^3 each has the same meaning as defined above,

crystallizing compound (I) to obtain substantially pure compound (I),

hydrolyzing the substantially pure compound (I) with aqueous acid, and

isolating substantially pure compound (II) from the hydrolysis reaction mixture.

4,339,576

ANTI-ASTHMATIC, ANTI-ALLERGIC, ANTI-CHOLINERGIC, BRONCHODILATOR AND ANTI-INFLAMMATORY 1-[(BENZOYLPHENYL)-LOWER-ALKYL]PIPERIDINES AND ANALOGS THEREOF

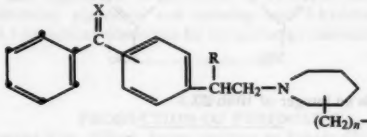
Bernard L. Zenitz, Rensselaer, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 261,881, May 8, 1981, abandoned, which is a division of Ser. No. 208,259, Nov. 19, 1980, Pat. No. 4,304,911. This application Aug. 24, 1981, Ser. No. 295,759

Int. Cl.³ C07D *211/26, 211/34, 413/04, 413/06*

U.S. Cl. 544—130 49 Claims

1. A member of the group consisting of (A) a compound having the formula



where R is hydrogen or lower-alkyl; n is O or the integer 1; N═B is 1-piperidinyl, 4-morpholinyl, amino, di-lower-alkylamino, lower-alkanoylamino, N-lower-alkyl-N-lower-alkanoylamino, cycloalkanecarbonylamino or benzoylamino, or benzoylamino substituted in the phenyl ring by lower-alkyl, halogen or lower-alkoxy; the group C═X represents C═O or CHOH and where the Phenyl-C═X moiety of the [Phenyl-(C═X)-Phenyl]-$CHRCH_2$ group is attached either to the 3-or 4-position of the phenyl ring; and the $(CH_2)_n$-N═B group is attached either to the 2-, 3- or 4-position of the piperidine ring; and (B) acid-addition salts thereof.

4,339,577

2-(THIOAMINO)-4,6-DIAMINO-1,3,5-TRIAZINES

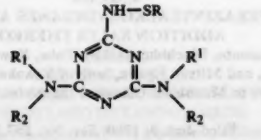
Gene R. Wilder, Medina, Ohio, assignor to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 148,061, May 12, 1980. This application Jun. 1, 1981, Ser. No. 268,937

Int. Cl.³ C07D *251/66*

U.S. Cl. 544—197 7 Claims

1. A compound of the formula



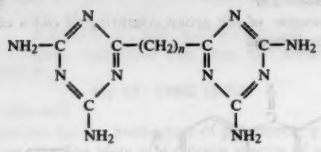
in which R, R_1 and R_2 independently are C_1–C_{12} alkyl, C_5–C_{12} cycloalkyl, C_7–C_{10} aralkyl, phenyl, or mono- or disubstituted phenyl wherein the substituents are C_1–C_6 alkyl, C_1–C_6 alkoxy, or C_1–C_6 alkylthio, or R_1 is hydrogen.

4,339,578
BISGUANAMINES

Peter Werle, Gelnhausen; Wolfgang Merk; Gerhard Pohl, both of Hanau, and Friedhelm Hoevels, Freigericht, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed May 5, 1980, Ser. No. 146,247
Claims priority, application Fed. Rep. of Germany, May 15, 1979, 2919496
Int. Cl.³ C07D *251/18*
U.S. Cl. 544—207 4 Claims

1. An alkylene bisguanamine of the formula



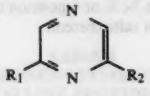
where n is an integer of 10 to 20.

4,339,579
2,6-BIS-(PYRROLOPYRAZINYL)PYRAZINES

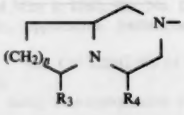
Meier E. Freed, Paoli, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Dec. 29, 1980, Ser. No. 221,124
Int. Cl.³ C07D *487/04*
U.S. Cl. 544—349 2 Claims

1. A compound of the formula:



wherein R_1 and R_2 are



wherein

R_3 is hydrogen, lower alkyl of 1–4 carbon atoms, phenyl or phenyl mono substituted with halo, lower alkyl of 1–4 carbon atoms or lower alkoxy of 1–4 carbon atoms;

R_4 is hydrogen, lower alkyl of 1–4 carbon atoms or phenyl; and

n is 1–3; or

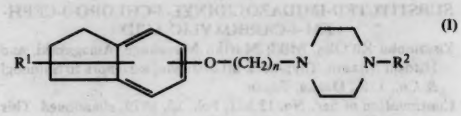
a pharmaceutically acceptable salt thereof.

4,339,580
PIPERAZINYLALKOXYINDANES AND ACID ADDITION SALTS THEREOF

Ryoji Kikumoto, Machida; Akihiro Tobe, Kawasaki; Harukazu Fukami, and Mitsuo Egawa, both of Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries, Limited, Tokyo, Japan

Filed Jun. 9, 1980, Ser. No. 157,341
Claims priority, application Japan, Jun. 26, 1979, 54-80505; Mar. 10, 1980, 55-30062
Int. Cl.³ C07D *401/04, 241/04;* A61K *31/495*
U.S. Cl. 544—360 4 Claims

1. A piperazinylalkoxyindane represented by the formula:



(I)

wherein n is an integer of 3 or 4; R^1 is hydrogen, halogen, alkyl having 1 to 5 carbon atoms, alkoxy having 1 to 5 carbon atoms, hydroxy, phenyl or nitro; and R^2 is phenyl or pyridyl optionally substituted by halogen, trifluromethyl, alkoxy having 1 to 5 carbon atoms or alkylcarbonyl having 2 to 6 carbon atoms, or a pharmaceutically acceptable acid addition salt thereof.

4,339,581
MILDEWCIDAL SILANE COMPOUNDS

George E. Totten, West Haverstraw; John P. Wesson, Croton-on-Hudson, both of N.Y.; Thomas C. Williams, Ridgefield, Conn., and Robert G. Eagar, Jr., Yorktown Heights, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Sep. 30, 1980, Ser. No. 192,604
Int. Cl.³ A01N *55/00;* C07F *7/18*
U.S. Cl. 546—14 11 Claims

1. A compound of the formula

$$(RO)_3Si(CH_2)_3XOAr$$

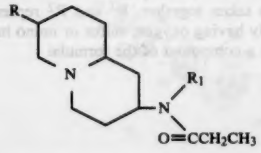
wherein R is alkyl of up to eight carbon atoms, X is —NH-C(O)— or —$S(CH_2)_2C(O)$—, and Ar is selected from the group consisting of p-nitrophenyl, pentachlorophenyl, 4-chloro- 3,5-dimethylphenyl, 8-quinolyl, and 5,7-dibromo-8-quinolyl.

4,339,582
QUINOLIZIDINE-PROPIONANILIDE COMPOUNDS

John W. Van Dyke, Jr., Elkhart, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 18, 1981, Ser. No. 293,965
Int. Cl.³ C07D *455/02*
U.S. Cl. 546—112 4 Claims

1. Quinolizidine-propionanilides characterized by the structural formula:



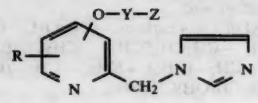
wherein R and R_1 are independently phenyl, substituted phenyl wherein the substituents are lower alkoxy of 1 to 4 carbon atoms, halogen, lower alkyl of 1 to 4 carbon atoms or hydroxyl or pyridyl.

4,339,583
(IMIDAZOLYLMETHYL)PYRIDINE COMPOUNDS AS THROMBOXANE SYNTHETASE INHIBITORS

Peter E. Cross, Canterbury, and Roger P. Dickinson, Dover, both of England, assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 20, 1980, Ser. No. 208,675
Claims priority, application United Kingdom, Nov. 27, 1979, 7940848
The portion of the term of this patent subsequent to Oct. 28, 1997, has been disclaimed.
Int. Cl.³ C07D *401/06, 401/00, 413/00*
U.S. Cl. 546—256 21 Claims

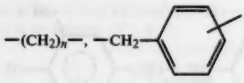
1. A compound of the formula



and the pharmaceutically-acceptable acid-addition salts thereof;

wherein R is hydrogen, alkyl having 1 to 4 carbon atoms or halo;

Y is



and Z is $COOR^1$, $CONHR^2$, $CONR^3R^4$, $COCOOR^1$, $COCONHR^2$, $COCONR^3R^4$, CN or 5-tetrazolyl;

wherein n is an integer from 1 to 4;

Het represents a 2 or 3-pyridyl or 2-thienyl group linked to Z by a ring carbon atom;

R^1 is hydrogen or alkyl having 1 to 4 carbon atoms;

R^2 is hydrogen, alkyl having 1 to 4 carbon atoms, alkanoyl having 2 to 4 carbon atoms, alkylsulphonyl having 1 to 4 carbon atoms, cyano, benzoyl or benzenesulphonyl, the phenyl ring in said benzoyl and benzenesulphonyl groups being optionally substituted with one or more radicals selected from alkyl having 1 to 4 carbon atoms, alkoxy having 1 to 4 carbon atoms, trifluoromethyl and halo;

and R^3 and R^4 are each alkyl having 1 to 4 carbon atoms, or R^3 and R^4 taken together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino or morpholino group;

and when Y is $—CH_2(Het)$, Z can further comprise an alkyl group having 1 to 4 carbon atoms;

provided that the O—Y—Z group is at the 3- or 5-position of the pyridine ring.

4,339,584

PROCESS FOR PREPARING 3-AMINO-5-(PYRIDINYL)-2(1H)-PYRIDINONES VIA N-HYDROXY-1,2-DIHYDRO-2-OXO-5-(PYRIDINYL)-NICOTINIMIDAMIDE BY REACTION WITH POLYPHOSPHORIC ACID

Monte D. Gruett, and George Y. Lesher, both of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Division of Ser. No. 218,616, Dec. 22, 1980, Pat. No. 4,305,948. This application May 11, 1981, Ser. No. 262,187

Int. Cl.³ C07D *401/04*

U.S. Cl. 546—257 **2 Claims**

1. The process which comprises reacting 1-R_1-1,2-dihydro-2-oxo-5-PY-6-R-nicotinonitrile with hydroxylamine to produce N-hydroxy-1-R_1-1,2-dihydro-2-oxo-5-PY-6-R-nicotinimidamide and reacting said N-hydroxy nicotinimidamide with polyphosphoric acid to produce 1-R_1-3-amino-5-PY-6-R-2(1H)-pyridinone, where R is hydrogen or lower-alkyl, R_1 is hydrogen, lower-alkyl or lower-hydroxyalkyl, and PY is 4- or 3-pyridinyl or 4- or 3-pyridinyl having one or two lower-alkyl substituents.

4,339,585

METHOD FOR THE PRODUCTION OF 2-HYDROXYMETHYL-3,4,5-TRIHYDROXY PIPERIDINE AND THE CORRESPONDING N-METHYL DERIVATIVE

Shingo Matsumura; Hiroshi Enomoto; Yoshiaki Aoyagi; Yoji Ezure; Yoshiaki Yoshikuni, and Masahiro Yagi, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed Nov. 9, 1978, Ser. No. 959,163

Claims priority, application Japan, Nov. 10, 1977, 52/135505; Nov. 10, 1977, 52/135506

Int. Cl.³ C07D *211/46*

U.S. Cl. 546—242 **6 Claims**

1. Process for the preparation of 2-hydroxymethyl3,4,5-trihydroxy piperidine which comprises subjecting a nojirimycin-producing actinomycetes culture containing nojirimycin to catalytic reduction with a metal catalyst until substantially all of said nojirimycin is converted to 2-hydroxymethyl-3,4,5-trihydroxy piperidine and isolating said 2-hydroxymethyl-3,4,5-trihydroxy piperidine by ion exchange chromatography.

4,339,586

PRODUCTION OF PYRIDOXINE

Harumi Kita, Hikari, Japan, assignor to Takeda Chemical Industries, Ltd., Osaka, Japan

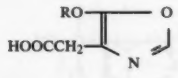
Filed Jan. 9, 1981, Ser. No. 223,923

Claims priority, application Japan, Jan. 11, 1980, 55/2372

Int. Cl.³ C07D *213/67*

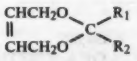
U.S. Cl. 546—301 **4 Claims**

1. A process for producing pyridoxine or its pharmaceutically acceptable acid addition salt, which comprises reacting a compound of the formula



(I)

wherein R is alkyl of 1 to 3 carbon atoms, with a compound of the formula



(II)

wherein R_1 and R_2, independently of each other, are hydrogen or alkyl of 1 to 5 carbon atoms, or R_1 and R_2, together with the adjacent carbon atom, may form a 5- or 6-membered cycloalkyl ring, at about 50° to 250° C., in the presence of about 1/100 to ½ mole, per mole of said (I), of a compound of the formula

(III)

wherein X is oxygen, —NH— or —NH—NH—, and subjecting the resultant compound to hydrolysis in the presence of an acid catalyst.

4,339,587

5-BENZYLOXY OR 5-HYDROXY-2-(2,2,2-TRIFLUOROETHOXY)-N-(2-PYRIDYLMETHYL)BENZAMIDE

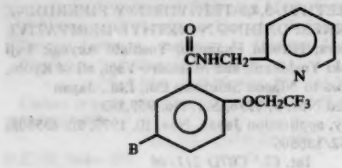
Elden H. Banitt, Woodbury, Minn., assignor to Riker Laboratories, Inc., Northridge, Calif.

Filed Jun. 8, 1981, Ser. No. 271,253

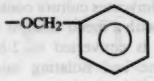
Int. Cl.³ C07D *213/74*

U.S. Cl. 546—337 **3 Claims**

1. A compound of the formula



in which B is selected from



and —OH.

4,339,588

PLANT GROWTH REGULATORS COMPRISING 4-HYDROXYISOXAZOLE AND RELATED COMPOUNDS

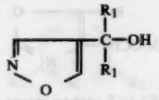
Takenori Kusumi, and Koji Nakanishi, both of New York, N.Y., assignors to Suntory Limited, Osaka, Japan

Division of Ser. No. 195,748, Oct. 10, 1980, abandoned. This application Jun. 26, 1981, Ser. No. 277,593

Int. Cl.³ C07D *261/08*

U.S. Cl. 548—247 **3 Claims**

1. A compound of the group represented by the formula:



wherein R_1 is methyl or ethyl.

4,339,589

PREPARATION OF 4-SUBSTITUTED OXAZOLIDIN-5-ONES

Wolfgang Steglich, Berlin; Rudolf Hurnaus; Peter Gruber, both of Biberach, and Boerries Kuebel, Berlin, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

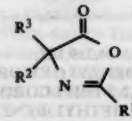
Continuation of Ser. No. 891,456, Mar. 29, 1978, Pat. No. 4,264,771, which is a continuation of Ser. No. 484,068, Jul. 16, 1974, abandoned. This application Aug. 5, 1980, Ser. No. 175,593

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1973, 2336718

Int. Cl.³ C07D *265/10*

U.S. Cl. 548—228 **7 Claims**

1. A process for the manufacture of a 4-substituted oxazolinone-(5) compound of the formula

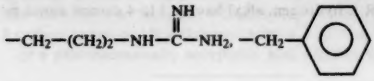


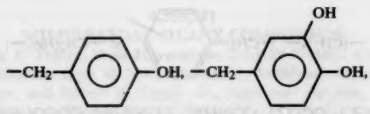
wherein

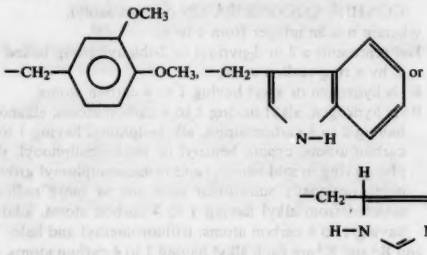
R^1 is phenyl which may be unsubstituted or substituted by chlorine, bromine, nitro, methoxy, dimethoxy, methyl or ethyl, and

R^2 is hydrogen, methyl or benzyl which is substituted by one or more hydroxy, alkoxy, acetoxy, trifluoromethyl, halogen or methyl, and

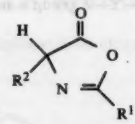
R^3 is an alkyl of 1 to 4 carbons, —CH_2OH, —$CH(OH)CH_3$, —CH_2SH, —$CH_2CH_2SCH_3$, —CH_2CO_2H, —$CH_2CH_2CO_2H$, —CH_2—$(CH_2)_2$—NH_2, —CH_2—$(CH_2)_3$—NH_2, —$CH_2CH_2CH(OH)CH_2NH_2$,





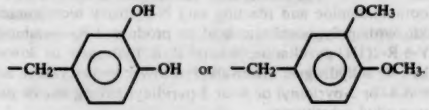


which consists essentially of reacting an oxazolinone-(5) compound of the formula



wherein

R^1 and R^2 are defined above, with a compound of the formula R^3X where R^3 is defined above and X is bromine, chlorine or iodine in an anhydrous aprotic solvent in the presence of a tertiary amine selected from the group consisting of triethylamine, ethyldiisopropylamine, a Hunig's base, N,N-dimethyl-cyclohexylamine, pyridine and a picoline at temperatures of from about −10° C. to 100° C., whereby the oxazolinone-(5) compound is substituted in the 4-position, with the proviso that when R^2 is substituted benzyl, then R^3 can only be an alkyl of 1 to 4 carbons; when R^2 is hydrogen and R^3 is an alkyl of 1 to 4 carbons, then of said alkyl R^3 can only be —CH_3, —$CH(CH_3)_2$, —$CH(CH_3)CH_2CH_3$ or —$CH_2CH(CH_3)_2$, otherwise R_3 can be any of the above shown substituents; and, when R^2 is methyl, then R^3 can only be



4,339,590

CYCLIC SULFUR COMPOUNDS

Noboru Yamazaki, Tokyo; Seiichi Nakahama, Toyohama, and Kazuo Yamaguchi, Mitaka, all of Japan, assignors to Japan Synthetic Rubber Company, Limited, Tokyo, Japan

Filed Jan. 21, 1981, Ser. No. 226,834

Claims priority, application Japan, May 21, 1980, 55-66346

Int. Cl.³ C07D *341/00*

U.S. Cl. 549—11 6 Claims

1. A cyclic sulfur compound represented by the formula,

(I)

wherein R is $—CH_2CH_2O)_nCH_2CH_2—$, m is an integer of 3 or 4 and n is an integer of 1 to 3.

4,339,591

PROCESS FOR THE PRODUCTION OF CABOXYLIC ACID CYANIDES

Axel Kleemann, Hanau; Bernd Lehmann, Freigericht, and Herbert Klenk, Hanau, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

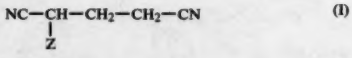
Filed Mar. 23, 1981, Ser. No. 246,313

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1980, 3011305; European Pat. Off., Oct. 14, 1980, 80106231

Int. Cl.³ C07D *333/24, 307/54;* C07C *120/04*

U.S. Cl. 549—72 26 Claims

1. In a process for the production of a carboxylic acid cyanide by reaction of a carboxylic acid halide with an alkali cyanide or hydrogen cyanide in the presence of copper (I) salt and a carboxylic acid nitrile, the improvement comprising employing as the carboxylic acid nitrile a dinitrile of the formula



(I)

where Z is a hydrogen atom or the methyl group.

4,339,592

PROCESS FOR THE PRODUCTION OF URETHANES

Robert Becker, Leverkusen; Christian Rasp; Günter Stammann, both of Cologne, and Johann Grolig, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 26, 1981, Ser. No. 238,518

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1980, 3009489

Int. Cl.³ C07C *125/073*

U.S. Cl. 560—25 7 Claims

1. A process for the production of a urethane in which an organic nitro compound is reacted with carbon monoxide and an organic compound containing at least one hydroxyl group in the liquid phase at elevated temperature and pressure in the presence of (a) a catalyst taken from the group consisting of the elements and compounds of elements from the group of noble metals of the 8th Secondary Group of the Periodic Table and (b) a co-catalyst, characterized in that the co-catalyst used comprises:

(1) a component taken from the group consisting of

(A) iron oxychloride

(B) a mixture of iron compounds containing iron oxychloride, and

(C) combinations of

(i) oxides and/or oxide hydrates of tetravalent tin, trivalent chromium, hexavalent molybdenum, hexavalent tungsten, pentavalent vanadium, divalent iron and/or trivalent iron with

(ii) a chloride of one of the elements of the 3rd to 5th Main Groups or 1st to 8th Secondary Groups of the Periodic Table of Elements and/or hydrochlorides of tertiary amines; and

(2) metallic iron or an iron alloy in finely divided or high surface form.

4,339,593

PROCESS FOR THE MANUFACTURE OF 3,6-DIALKYL RESORCYLIC ACID ESTERS

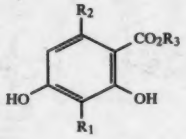
Brian J. Willis, Ramsey; David I. Lerner, Teaneck, both of N.J., and Derek H. R. Barton, Gif-sur-Yvette, France, assignors to Fritzsche Dodge & Olcott Inc., New York, N.Y.

Filed Dec. 16, 1980, Ser. No. 216,901

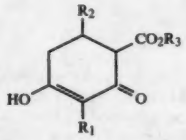
Int. Cl.³ C07C *69/76*

U.S. Cl. 560—70 11 Claims

1. A process for preparing a 3,6-dialkyl resorcylic acid ester having the structure:



wherein each of R_1, R_2, and R_3 is C_1 to C_3 alkyl, which comprises treating a dihydroresorcylic acid ester having the general structure:



wherein each of R_1, R_2, and R_3 is C_1 to C_3 alkyl, with sulfuryl chloride in the presence of a suitable solvent, said treatment being carried out at a temperature in the range from about −5° to about 100° C., and recovering the resulting 3,6-dialkyl resorcylic acid ester.

4,339,594

PROCESS FOR THE MANUFACTURE OF PHENYLACETIC ACID AND SIMPLE DERIVATIVES THEREOF

Werner Spielmann, Kelkheim, and Georg Schaeffer, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 31, 1980, Ser. No. 202,605

Claims priority, application Fed. Rep. of Germany, Nov. 3, 1979, 2944480

Int. Cl.³ C07C *69/76*

U.S. Cl. 562—465 6 Claims

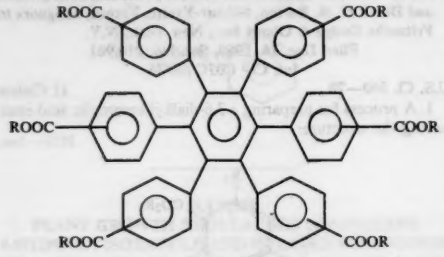
1. A process for the manufacture of phenylacetic acid or a derivative thereof consisting essentially of catalytically hydrogenating mandelic acid or a corresponding derivative thereof in the presence of a noble metal catalyst in an aqueous solution free of any mineral acid, said catalytic hydrogenation being conducted at a temperature ranging from room temperature to about 200° C. and at a pressure ranging from atmospheric to about 20 bar hydrogen pressure.

4,339,595
HEXA(META-,PARA-CARBOXYPHENYL)BENZENE COMPOUNDS

Carl A. Udovich, Joliet, and Ellis K. Fields, River Forest, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Jun. 27, 1980, Ser. No. 163,529
Int. Cl.[3] C07C *69/76, 63/48, 69/773, 51/353, 67/343, 103/82*
U.S. Cl. 560—76 10 Claims

1. Hexa-carboxyphenylbenzene compound of the structural formula:

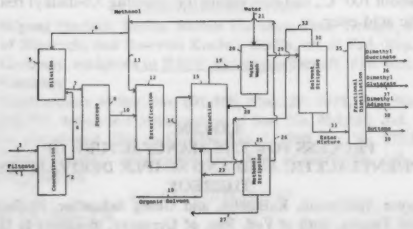


wherein R is selected from the group consisting of hydrogen, alkyl moieties and aryl moieties.

4,339,596
TREATMENT OF BYPRODUCT STREAM FROM ADIPIC ACID MANUFACTURE

Freylon B. Coffey, and Norbert F. Cywinski, both of Odessa, Tex., assignors to El Paso Products Company, Odessa, Tex.

Filed Nov. 15, 1979, Ser. No. 94,425
Int. Cl.[3] B01D *3/34;* C07C *67/08*
U.S. Cl. 560—204 3 Claims



1. A method of facilitating the storage and transport of an aqueous filtrate waste byproduct stream derived from a process for producing adipic acid by nitric acid oxidation of cyclohexanone/cyclohexanol, which method comprises the steps of (1) reducing the volume of the aqueous filtrate medium by the removal of water and volatile components which co-distill with water to provide a concentrate solution which has a water content between about 5–30 weight percent and a nitric acid content between 1–6 weight percent, based on total solution weight; and (2) admixing the concentrate solution with between about 5–20 weight percent methanol, based on total solution weight, to form a single phase homogeneous solution; wherein the said homogeneous solution has a freezing point below about 5° C.

4,339,597
PROCESS FOR PRODUCING 2-PENTENOIC ESTERS

Nobuo Isogai; Motoyuki Hosokawa; Takashi Okawa; Natsuko Wakui, and Toshiyasu Watanabe, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,966
Claims priority, application Japan, Mar. 24, 1980, 55/37128
Int. Cl.[3] C07C *67/333*
U.S. Cl. 560—205 8 Claims

1. A process for producing a 2-pentenoic ester which comprises contacting the corresponding 3-pentenoic ester with a composite catalyst composed of magnesia and alumina to isomerize the 3-pentenoic ester.

4,339,598
PREPARATION OF UNSATURATED ACIDS AND ESTERS FROM SATURATED CARBOXYLIC ACID DERIVATIVES AND CARBONYL COMPOUNDS OVER CATALYSTS CONTAINING V AND SB

Andrew T. Guttmann, Maple Heights, and Robert K. Grasselli, Chagrin Falls, both of Ohio, assignors to SOHIO, Cleveland, Ohio

Filed Dec. 31, 1980, Ser. No. 221,588
Int. Cl.[3] C07C *67/343, 51/353*
U.S. Cl. 560—210 23 Claims

4. A process for producing unsaturated carboxylic acids and esters which comprises passing into a reaction zone, a vaporous mixture of a saturated monocarboxylic acid or its ester with a compound selected from the group consisting of formaldehyde, Formaldehyde acetals, or volatile formaldehyde polymers, at a temperature of from 200° C. to about 450° C., in the presence of a catalyst having the empirical formula

$$VSb_mA_aB_bC_cO_x$$

wherein

m=0.5–40; and

A=alkali metal, alkaline earth metal, Tl, La, rare earth metal, Th, or mixtures thereof,

B=Cu, Ag, Fe, Co, Ni, Mn, Cr, Nb, Ta, Ti, As, Sn, B, U or mixtures thereof,

C=Mo, W, Te, Bi, or mixtures thereof;

and

a=0–1;

b=0–1;

c=0–1,

x is determined by the nature and oxidation state of the other elements.

4,339,599
PROCESS FOR THE PREPARATION OF BENZENE-MONOCARBOXYLIC ACIDS

Cornelis Jongsma, Oirsbeek, Netherlands, assignor to Stamicarbon, B.V., Geleen, Netherlands

Filed Mar. 9, 1981, Ser. No. 242,115
Claims priority, application Netherlands, Mar. 15, 1980, 8001550
Int. Cl.[3] C07C *51/16*
U.S. Cl. 562—412 7 Claims

1. Process for the preparation of a benzene-monocarboxylic acid by oxidation of a monoalkyl-benzene compound in the liquid phase with the aid of a gas containing molecular oxygen in the presence of a catalyst composed of a cobalt and a manganese compound, both of which are soluble in the reaction mixture, wherein the manganese:cobalt atomic ratio in said catalyst is between 1:500 and 1:100,000.

4,339,600

COMPOUNDS FOR ALLEVIATING ANGIOTENSIN RELATED HYPERTENSION

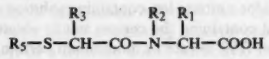
Miguel A. Ondetti, Princeton, and David W. Cushman, West Windsor, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 773,864, Mar. 3, 1977, abandoned, which is a division of Ser. No. 684,606, May 10, 1976, Pat. No. 4,053,651. This application Feb. 13, 1978, Ser. No. 877,197

Int. Cl.³ C07C *153/09, 149/437, 149/243, 149/247*

U.S. Cl. 562—426 21 Claims

1. A compound of the formula

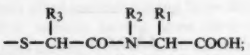


or a physiologically acceptable salt thereof, wherein

R_1 is hydroxy-lower alkylene, hydroxyphenyl-lower alkylene, amino-lower alkylene, guanidino-lower alkylene, mercapto-lower alkylene, lower alkylmercapto-lower alkylene, carbamoyl-lower alkylene or carboxy-lower alkylene;

R_2 and R_3 each is hydrogen, lower alkyl or phenyl-lower alkylene; and

R_5 is hydrogen, lower alkanoyl, benzoyl or



with the proviso that if R_2 and R_5 are both hydrogen and R_3 is methyl, R_1 is not mercapto-lower alkylene.

4,339,601

TEREPHTHALIC ACID DERIVATIVES AND PROCESS FOR PREPARING THEM

Albert M. V. Jacques, Norristown, Pa., assignor to Union Carbide Corporation, Danbury, Conn.

Division of Ser. No. 6,741, Jan. 26, 1979, Pat. No. 4,252,979, which is a continuation of Ser. No. 528,002, Nov. 29, 1974, abandoned. This application Sep. 30, 1980, Ser. No. 192,471

Int. Cl.³ C07C *79/46*

U.S. Cl. 562—438 8 Claims

1. A process for the preparation of 2,5-dichloro-3-nitrobenzoic acid, which comprises heating 2,5-dichloro-3-nitroterephthalic acid in the presence of a decarboxylating agent selected from the group consisting of dimethyl sulphoxide and dimethyl formamide.

4,339,602

PROCESS OF PREPARATION OF RACEMIC HYDROXYARYLGLYCOLIC ACIDS AND NOVEL PRODUCTS RESULTING THEREFROM

Alain Schouteeten, Ezanville, and Yani Christidis, Paris, both of France, assignors to Societe Francaise Hoechst, France

PCT No. PCT/FR80/00126, § 371 Date Feb. 25, 1981, § 102(e) Date Feb. 25, 1981, PCT Pub. No. WO81/00254, PCT Pub. Date Feb. 5, 1981

PCT Filed Jul. 24, 1980, Ser. No. 243,965

Claims priority, application France, Jul. 25, 1979, 79 19171

Int. Cl.³ C07C *65/11, 59/50*

U.S. Cl. 562—466 1 Claim

1. A racemic ortho- or parahydroxyarylglycolic acid selected from the group consisting of:

4-hydroxy 3-tertiobutyl mandelic acid;

2-hydroxy 5-tertiobutyl mandelic acid;

2-fluoro 4-hydroxymandelic acid;

monohydrated 3,5-dimethoxy 4-hydroxy mandelic acid;

2-hydroxy 5-methyl mandelic acid;

(1-hydroxy 2-naphthyl) glycolic acid;

4-ethyl 2-hydroxy mandelic acid, and

4-hydroxy 3-methyl mandelic acid.

4,339,603

PROCESS FOR CONVERTING OPTICALLY ACTIVE L-N-(2-AMINO-2-PHENETHYL)-2-METHOXYETHYLAMINE TO THE CORRESPONDING DL-DERIVATIVE

Sivaraman Raghu, Norwalk, and Arnold Zweig, Westport, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Jan. 8, 1979, Ser. No. 1,807

Int. Cl.³ C07C *20/00*

U.S. Cl. 564—302 5 Claims

1. A process for the racemization of optically active l-N-(2-amino-2-phenethyl)-2-methoxyethylamine which comprises the steps of:

(a) converting optically active l-N-(2 amino-2-phenethyl)-2-methoxyethylamine to optically active l-1-(2-methoxyethyl)-4-phenyl-2-imidazolidone,

(b) subjecting the latter optically active imidazolidone to dehydrogenation and hydrogenation to obtain optically inactive, racemic (dl) 1-(2-methoxyethyl)-4-phenyl-2-imidazolidone,

(c) converting the latter racemic imidazolidone by acid hydrolysis, and

(d) recovering optically inactive, racemic dl N-(2-amino-2-phenethyl)-2-methoxyethylamine.

4,339,604

METHOD FOR THE PREPARATION OF CYCLOHEXANOL AND/OR CYCLOHEXANONE

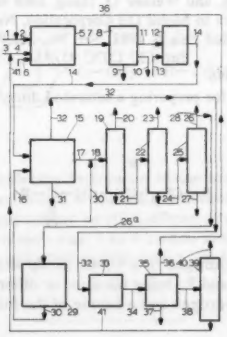
Paul C. van Geem, Spaubeek; Theodorus F. M. de Graaf; Dirk Knol, both of Beek, and Otto G. Plantema, Nederweert Eind, all of Netherlands, assignors to Stamicarbon, B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 171,034, Jul. 22, 1980, abandoned. This application Oct. 30, 1980, Ser. No. 202,145

Claims priority, application Netherlands, Jul. 26, 1979, 7905781

Int. Cl.³ C07C *45/32, 35/08*

U.S. Cl. 568—357 15 Claims



1. A method for the preparation of cyclohexanone from benzene by the steps of:

hydrogenating benzene in the presence of hydrogen and a hydrogenation catalyst in a hydrogenation zone to form a hydrogenation reaction mixture containing cyclohexene, by-product cyclohexane, and unreacted benzene;

oxidizing cyclohexene contained in said hydrogenation reaction mixture to cyclohexanone in an oxidation zone in the presence of an oxygen containing gas and an oxidation catalyst to form an oxidation reaction mixture containing

cyclohexanone, by-product cyclohexane and unreacted benzene;

separating from said oxidation reaction mixture product cyclohexanone, and an organic phase containing by-product cyclohexane and unreacted benzene;

the improvement comprising introducing said organic phase into a hydrogenation zone wherein by-product cyclohexane contained in said organic phase is dehydrogenated to benzene, and recycled to said hydrogenation zone.

4,339,605

PROCESS FOR THE THERMAL DECOMPOSITION OF PHENOL PITCH

Ferdinando Ligorati, Usmate, and Emanuele Sartorio, Messina, both of Italy, assignors to Euteco Impianti S.p.A., Milan, Italy

Filed Feb. 8, 1980, Ser. No. 119,720
Int. Cl.³ C07C *45/51*
U.S. Cl. 568—383 **5 Claims**

1. A continuous process for treating the phenol pitch obtained as a bottoms fraction in the distillation of raw phenol deriving from the acid hydrolysis of cumene hydroperoxide, to recover therefrom desired products consisting of phenol, alpha-methylstyrene, cumene and acetone, which comprises introducing said phenol pitch, preheated to a temperature of from 180° C. to 280° C., and steam into a reactor in a weight ratio between steam and phenol pitch of from 0.01:1 to 1:1, withdrawing from the top of said reactor a vapor phase comprising said desired products, withdrawing from the bottom of said reactor a liquid phase consisting essentially of compounds with a higher boiling point than said desired products, and operating in the reactor at a pressure of from 4 to 12 Kg/cm^2, at a temperature of from 320° to 400° C., as measured in said liquid phase, and with an average residence time of the phenol pitch in the reactor of from 0.5 to 10 hours.

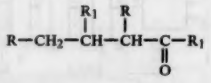
4,339,606

CONVERSION OF KETONES OVER METAL-CONTAINING ZEOLITE CATALYSTS

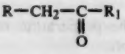
Tracy J. Huang, and Werner O. Haag, both of Lawrenceville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 6, 1981, Ser. No. 232,074
Int. Cl.³ C07C *45/45*
U.S. Cl. 568—396 **15 Claims**

1. A process for preparing a saturated dimeric ketone of the formula



wherein R is hydrogen or a C_1–C_5 group and R_1 is a C_1–C_6 alkyl group, R and R_1 being the same or different, comprising contacting a hydrogen and a ketone of the formula



wherein R and R_1 are as hereinbefore defined, with a crystalline zeolite having a silica to alumina ratio of at least 12 and a Constraint Index of from 1 to 12 and containing a Group VIII metal incorporated by exchange, imgregnation or physical admixture, the process being carried out at from about 100° C. to about 300° C., at a pressure of from 0 to about 2000 psig and a weight hourly space velocity of from about 0.2 to about 20.

4,339,607

PROCESS FOR PREPARING ANISALDEHYDE

Shigeru Torii; Shoji Nakane, both of Okayama; Toshifumi Shirakawa, Koshigaya, and Mitsuo Akada, Tokushima, all of Japan, assignors to Otsuka Kagaku Yakuhin Kabushiki Kaisha, Osaka, Japan

Filed Jul. 21, 1980, Ser. No. 170,781
Claims priority, application Japan, Jul. 30, 1979, 54/97481
Int. Cl.³ C07C *45/28*
U.S. Cl. 568—426 **12 Claims**

1. A process for preparing anisaldehyde characterized by performing at least once the steps of (a) electrolyzing cerium (III) nitrate or ammonium cerium (III) nitrate with use of a cathode chamber having contained therein nitrate ion-containing water and/or a nitrate ion-containing solution comprising a lower alcohol containing the cerium salt to obtain water containing cerium (IV) nitrate or ammonium cerium (IV) nitrate and/or a solution comprising a lower alcohol containing the cerium (IV) salt, and (b) oxidizing, at a temperature of about −10° to about 60° C., p-methyl anisole to anisaldehyde with the cerium (IV) salt-containing solution comprising a lower alcohol with or without the water contained therein, or with the cerium (IV) salt-containing water having a lower alcohol admixed therewith, the amount of said lower alcohol present in the cerium (IV) salt-containing solution, or in the cerium (IV) salt-containing water having a lower alcohol admixed therewith, being at least 20% by weight of the total amount of solvent.

4,339,608

PROCESS FOR SELECTIVE FORMATION OF C_4 COMPOUNDS AND TERTIARY ORGANO GROUP VA COMPOUND-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, and John E. Bozik, all of Gibsonia, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 42,330, May 25, 1979, which is a continuation-in-part of Ser. No. 957,130, Nov. 2, 1978, and Ser. No. 936,717, Aug. 25, 1978. This application Dec. 11, 1980, Ser. No. 215,354
Int. Cl.³ C07C *27/22, 45/50*
U.S. Cl. 568—487 **26 Claims**

1. A process for selectively producing n-butanol and n-butanal, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a catalyst system which consists essentially of (a) a cobalt entity selected from the group consisting of a cobalt carbonyl, a hydrido cobalt carbonyl and a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, (b) an iodine promoter and (c) a tertiary organo compound defined by the formula:

wherein E is a member selected from the group consisting of trivalent arsenic and trivalent antimony and R_1, R_2 and R_3, the same or different, are selected from the group consisting of aryl radicals having from six to 20 carbon atoms and halogen substituted derivatives thereof, and aralkyl and alkaryl radicals having from six to 40 carbon atoms, wherein the molar ratio of the cobalt entity to the arsenic or antimony entity is in the range of about 10:1 to about 1:5, the molar ratio of iodine to cobalt is in the range of about 1:3 to about 1.5:1 when E is arsenic, the molar ratio of iodine to cobalt is in the range of about 1:5 to about 2:1 when E is antimony, subjecting the contents of said reaction zone to an elevated temperature of about 180° C. to about 225° C. and an elevated pressure for a time sufficient to obtain n-butanol and n-butanal.

4,339,609
PROCESS FOR SELECTIVE FORMATION OF C_4 COMPOUNDS AND BIPHOSPHINE DISULFIDE-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 11, 1980, Ser. No. 215,554
Int. Cl.³ C07C *27/22, 45/50*
U.S. Cl. 568—487 16 Claims

1. A process for selectively producing n-butanol and n-butanal, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a cobalt catalyst selected from the group consisting of (a) a cobalt carbonyl, (b) a hydrido cobalt carbonyl and (c) a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, an iodine promoter and a biphosphine disulfide defined by the following formula:

wherein R_1, R_2, R_3 and R_4, the same or different, are selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aryl radicals having from six to 20 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and halogen substituted derivatives thereof, under elevated temperature and pressure conditions for a time sufficient to convert said methanol to n-butanol and n-butanal.

4,339,610
PROCESS FOR SELECTIVE FORMATION OF C_4 COMPOUNDS AND THIOL-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 11, 1980, Ser. No. 215,555
Int. Cl.³ C07C *27/22, 45/50*
U.S. Cl. 568—487 18 Claims

1. A process for selectively producing n-butanol and n-butanal, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a cobalt catalyst selected from the group consisting of (a) a cobalt carbonyl, (b) a hydrido cobalt carbonyl and (c) a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, an iodine promoter and a thiol defined by the following formula:

RSH

wherein R is selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aryl radicals having from six to 20 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and halogen substituted derivatives thereof, under elevated temperature and pressure conditions for a time sufficient to convert said methanol to n-butanol and n-butanal.

4,339,611
PROCESS FOR SELECTIVE FORMATION OF C_4 COMPOUNDS AND ORGANIC SULFIDE-CONTAINING CATALYST SYSTEM USED THEREIN

Wayne R. Pretzer; Thaddeus P. Kobylinski, both of Gibsonia, and John E. Bozik, Pittsburgh, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Dec. 11, 1980, Ser. No. 215,556
Int. Cl.³ C07C *27/22, 45/50*
U.S. Cl. 568—487 16 Claims

1. A process for selectively producing n-butanol and n-butanal, which comprises reacting methanol, hydrogen and carbon monoxide in the presence of a cobalt catalyst selected from the group consisting of (a) a cobalt carbonyl, (b) a hydrido cobalt carbonyl and (c) a cobalt-containing material convertible to a cobalt carbonyl or a hydrido cobalt carbonyl, an iodine promoter and an organic sulfide having the formula:

$R_1—S—R_2$

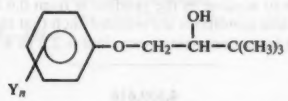
wherein R_1 and R_2 are either the same or different members selected from the group consisting of saturated or unsaturated, straight or branched chain alkyl radicals having from one to 24 carbon atoms, cycloalkyl radicals having from three to 40 carbon atoms, aryl radicals having from six to 20 carbon atoms, aralkyl and alkaryl radicals having from six to 40 carbon atoms and halogen substituted derivatives thereof, under elevated temperature and pressure conditions for a time sufficient to convert said methanol to n-butanol and n-butanal.

4,339,612
PREPARATION OF 3,3-DIMETHYL-1-PHENOXY-BUTAN-2-OLS AS FUNGICIDE INTERMEDIATES

Eckart Kranz, Wuppertal, and Peter Siegle, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 13, 1981, Ser. No. 234,529
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008477
Int. Cl.³ C07C *43/205*
U.S. Cl. 568—649 2 Claims

1. A 3,3-dimethyl-1-phenoxy-butan-2-ol of the formula



in which

Y is a fluorine, chlorine, bromine or iodine atom, a phenyl or phenoxy radical which is optionally substituted by halogen, a nitro or cyano radical, an alkyl, alkoxy or alkoxycarbonyl radical with in each case 1 to 4 carbon atoms in the alkyl moiety, or a cycloalkyl radical with 5 or 6 carbon atoms, and

n is 0, 1, 2 or 3.

4,339,613
SUPERACID CATALYZED PREPARATION OF RESORCINOL FROM META-DIISOPROPYLBENZENE

George A. Olah, Beverly Hills, Calif., assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Mar. 14, 1980, Ser. No. 130,401
Int. Cl.³ C07C *37/08, 39/08*
U.S. Cl. 568—768 3 Claims

1. The process of producing resorcinol, selectively in high yield, which comprises reacting meta-diisopropylbenzene dihydroperoxide in the presence of a fluoroalkanesulfonic acid

superacid cleavage rearrangement catalyst at a temperature sufficient to produce resorcinol selectively with high yields.

4,339,614

SUPERACID CATALYZED PREPARATION OF RESORCINOL FROM META-ISOPROPYLPHENOL

George A. Olah, Beverly Hills, Calif., assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Mar. 14, 1980, Ser. No. 130,402
Int. Cl.[3] C07C *37/08, 39/08*
U.S. Cl. 568—768 4 Claims

1. The process of producing resorcinol, selectively in high yield, which comprises reacting an ether or ester derivative of meta-isopropylphenol hydroperoxide in which the ether or ester group is an easily cleavable phenol protecting group with a superacid cleavage rearrangement catalyst comprising a perfluoroalkanesulfonic acid at a temperature sufficient to produce resorcinol with selectively with high yields.

4,339,615

PROCESS FOR PRODUCING RESORCINOL

Ichiro Imai, Funabashi; Fujihisa Matsunaga; Hiroaki Nakagawa, both of Iwakuni; Masayasu Isibasi, Waki, and Tohru Taguchi, Ichihara, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Filed Nov. 10, 1980, Ser. No. 205,182
Claims priority, application Japan, Nov. 12, 1979, 54/145360
Int. Cl.[3] C07C *37/08, 39/08*
U.S. Cl. 568—768 9 Claims

1. In a process for producing resorcinol, which comprises cleaving m-diisopropylbenzene dihydroperoxide in the presence of a water-soluble acid catalyst in a mixed solvent consisting of toluene and acetone, treating the resulting acid cleavage product containing resorcinol with an aqueous solution of a neutral salt selected from the group consisting of sodium sulfate, potassium sulfate, sodium chloride and sodium phosphate under acidic conditions, separating the solvent layer containing resorcinol from the aqueous layer, and recovering resorcinol from the separated solvent layer; the improvement wherein

(i) the acid cleavage is carried out while maintaining the weight ratio of toluene to acetone at less than 0.6, and at a time after formation of the acid cleavage product but before the treatment of the cleavage product with the aqueous solution of the neutral salt, the amount of toluene in the mixed solvent is adjusted so that the weight ratio of toluene to acetone in the product is from 0.6 to 1.1, and

(ii) the acidic conditions are selected such that the pH of the solvent layer containing resorcinol is 2.5 to 4.

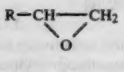
4,339,616

PROCESS FOR THE MANUFACTURE OF 1,2-DIOLS HAVING AT LEAST 4 CARBON ATOMS

Horst Rutzen, Langenfeld, and Wolfgang Rupilius, Düsseldorf-Urdenbach, both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen and Deutsche Gold-und Silberscheide Anstalt Vormals Roessler, Frankfurt am Main, both of, Fed. Rep. of Germany

Filed Sep. 15, 1980, Ser. No. 187,530
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938154
Int. Cl.[3] C07C *29/10*
U.S. Cl. 568—867 12 Claims

11. In the process for the preparation of higher 1,2-diols and/or higher 1,2-polyols which comprises hydrolyzing the corresponding epoxides of the formula:



in which R is selected from the group consisting of alkyl having 2 to 28 carbon atoms, haloalkyl having 2 to 28 carbon atoms, alkoxyalkyl having 2 to 28 carbon atoms, epoxyalkyl having 3 to 28 carbon atoms, haloepoxyalkyl having 3 to 28 carbon atoms, alkoxyepoxyalkyl having from 4 to 28 carbon atoms, and mixtures thereof, with the proviso that the total number of carbon atoms in the epoxide is from 4 to 30 carbon atoms, with a solution of a catalyst, and recovering said diols and/or polyols; the improvement consisting of employing from 0.5 to 10 mol % based on the epoxide employed of a catalyst system selected from the group consisting of:

(1) salts of amines selected from the group consisting of monoalkyl amines having from 1 to 18 carbon atoms, dialkylamines having from 1 to 18 carbon atoms in each alkyl, trialkylamines having from 1 to 18 carbon atoms in each alkyl, alkylol-dialkylamines having from 1 to 18 carbon atoms in each alkyl and alkylol, phenylalkylamines having from 1 to 8 carbon atoms in the alkyl, cyclodiazaalkanes having from 4 to 8 carbon atoms, and pyridinyl-dialkylamine having from 1 to 8 carbon atoms in the alkyl with acids selected from the group consisting of:

(a) an organic acid selected from the group consisting of alkanoic acids having from 1 to 26 carbon atoms, alkanedioic acids having from 2 to 26 carbon atoms, alkanetrioic acids and hydroxyalkanetrioic acids having from 4 to 26 carbon atoms, hydroxyalkanoic acids having from 2 to 26 carbon atoms, chloroalkanoic acids having from 2 to 26 carbon atoms, dichloroalkanoic acids having from 2 to 26 carbon atoms, trichloroalkanoic acids having from 2 to 26 carbon atoms, benzoic acid, phenyl alkanoic acids having from 8 to 24 carbon atoms, phenylalkenoic acids having from 9 to 24 carbon atoms, benzene dicarboxylic acids, pyromucic acid, and tetrahydrofuran carboxylic acids, and

(b) strong mineral acids,

(2) quaternary ammonium salts selected from the group consisting of tetraalkyl ammonium salts and phenylalkyl trialkyl ammonium salts with the above acids, and

(3) mixtures thereof, wherein the molar ratio of amine or ammonium to acid is from 1:1.1 to 1.8,

as said catalyst.

4,339,617

HYDRATION OF OLEFINS IN THE PRESENCE OF A CORROSION INHIBITOR

Tamotsu Imai, Mount Prospect, and Robert J. Schmidt, Hoffman Estates, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 135,743, Mar. 31, 1980, abandoned. This application Mar. 9, 1981, Ser. No. 241,868
Int. Cl.[3] C07C *29/04*
U.S. Cl. 568—899 15 Claims

1. A process for the production of an alcohol which comprises hydrating an olefinic hydrocarbon at hydration conditions in the presence of an acidic compound selected from the group consisting of sulfuric acid, nitric acid, benzene sulfonic acid and trifluoromethane sulfonic acid and in the added presence of a corrosion inhibitor selected from the group consisting of nitrate, halide, carbonate and sulfate salts of magnesium, barium, beryllium and radium, and recovering the resultant alcohol.

4,339,618

PROCESS FOR THE PRODUCTION OF SUBSTITUTED NITROARYL COMPOUNDS

Manfred Rosner, Muttenz, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

Filed Jun. 17, 1980, Ser. No. 160,254

Claims priority, application Switzerland, Jun. 21, 1979, 5806/79; Sep. 4, 1979, 7980/79; Apr. 9, 1980, 2716/80; Apr. 9, 1980, 2717/80

Int. Cl.[3] C07C *76/02*; C07B *11/00*; C07C *79/12, 79/10, 79/46*

U.S. Cl. 568—937 10 Claims

1. A process for the production of mono-nitro-substituted aryl compounds which are otherwise at least monosubstituted with an electronegative substitutent, by mono-nitration of aryl compounds which are at least so monosubstituted, which process comprises carrying out the nitration by adding nitric acid to a two-phase system which consists of an inorganic phase consisting of sulfuric acid having a concentration of at least 80% and an organic phase consisting of an inert organic liquid in which the nitration product is almost insoluble in the presence of sulfuric acid, at a temperature in the range from −30° to 100° C., with nitric acid or a mixture of nitric acid and sulfuric acid as nitrating agent.

4,339,619

SOLVENT DEWAXING WAXY HYDROCARBON OILS USING DEWAXING AID

Takashi Onodera, Urawa; Kikuji Komine, Tokorozawa; Fumio Ohashi, and Tsutomo Naito, both of Ohi, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 35,474, May 3, 1979, abandoned, which is a division of Ser. No. 926,812, Jul. 21, 1978. This application Aug. 21, 1980, Ser. No. 180,106

Claims priority, application Japan, Apr. 18, 1977, 52-44261

Int. Cl.[3] C07C *25/18*

U.S. Cl. 570—183 1 Claim

1. An improved chlorinated wax/naphthalene condensation product dewaxing aid wherein the improvement comprises an average molecular weight of between about 20,000 to 500,000 and a molecular weight distribution exceeding the range of from 10,000 to 1,000,000, but falling within the range of between about 2,000 to 3,000,000.

4,339,620

COPPER-CATALYZED FLUID-BED ETHYLENE OXHYDROCHLORINATION PROCESS

Joseph A. Cowfer, Medina; Jamal S. Eden, Akron, and Angelo J. Magistro, Brecksville, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Continuation of Ser. No. 91,289, Nov. 5, 1979, abandoned. This application Mar. 2, 1981, Ser. No. 239,806

Int. Cl.[3] C07C *17/15*

U.S. Cl. 570—243 4 Claims

1. In the production of ethylene dichloride by fluid bed catalytic oxyhydrochlorination of ethylene by a process which includes the steps of:

(1) introducing only gaseous reactants consisting of ethylene, hydrogen chloride gas and an oxygen-containing gas in a molar ratio of 1.0 to 1.2 moles of ethylene and 0.55 to 0.9 moles of oxygen for each 2 moles of hydrogen chloride into a bed of solid particles contained in a reaction zone at a flow rate such as to fluidize said solid particles and form a fluidized catalyst bed, said catalyst bed consisting of solid particles of a fluidizable alumina support having a surface area in the range of 60 to 150 square meters per gram, on which have been deposited outside said reaction zone catalytic salt consisting of cupric chloride in an amount such that the particles making up the bed contain 2 to about 10 weight percent copper,

(2) maintaining said gaseous reactants in said reaction zone in contact with said fluidized solid particles under conditions such there is complete lack of liquid in said reaction zone and vapor phase reaction occurs to produce ethylene chloride, said reaction conditions including a temperature in the range of 190° to 250° C. and a contact time for any given quantity of reactants, of 10 to 40 seconds, and

(3) recovering ethylene dichloride from the gaseous effluent from said reaction zone, the improvement for substantially preventing particles in said catalyst bed from sticking to one another during said process and thereby adversely affecting the ability to maintain the catalyst bed in the fluidized condition, which improvement consists in providing in the reaction zone to the fluidized bed of step (1), bare solid particles of said fluidizable alumina support on which no catalyst has been deposited and in situ in step (2) transferring to and depositing on said bare support particles a portion of the cupric chloride catalyst already deposited outside the reaction zone on other fluidizable support particles.

4,339,621

PREPARATION OF O-BENZYL TOLUENE

John O. Morley, Rochdale, England, assignor to Imperial Chemical Industries Limited, London, England

Filed Feb. 24, 1981, Ser. No. 237,774

Claims priority, application United Kingdom, Mar. 27, 1980, 8010243

Int. Cl.[3] C07C *2/02, 6/12, 13/28, 15/16*

U.S. Cl. 585—422 10 Claims

1. A process for the preparation of a diphenylmethane by reaction of a benzene with an α-chloromethylbenzene in the presence of sulphuric acid and a cationic surfactant or a nonionic surfactant which is susceptible to protonation under strong acid conditions.

4,339,622

METHOD FOR PREPARING ETHYL BENZENE

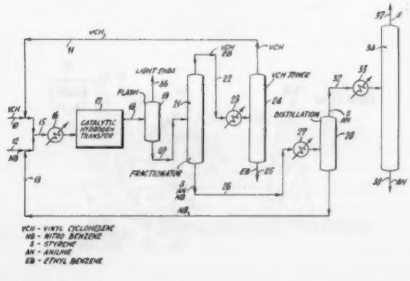
John A. Patterson, Fishkill, N.Y.; Wheeler C. Crawford, Houston, and James R. Wilson, Missouri City, both of Tex., assignors to Texaco, Inc., White Plains, N.Y.

Continuation of Ser. No. 952,763, Oct. 19, 1978, Pat. No. 4,163,761. This application Jan. 5, 1979, Ser. No. 1,244

The portion of the term of this patent subsequent to Aug. 7, 1996, has been disclaimed.

Int. Cl.[3] C07C *5/52*

U.S. Cl. 585—433 6 Claims



1. The method for preparing ethylbenzene which comprises: passing a charge stream containing vinyl cyclohexene and $R'NO_2$, wherein R' is alkyl, cycloalkyl, aralkyl, aryl, or alkaryl, into contact with a catalytic amount of copper chromite as catalyst at 170° C.-360° C. thereby forming product stream containing ethylbenzene;

withdrawing said product stream containing ethylbenzene and recovering ethylbenzene from said product stream.

4,339,623

MONOMER/SOLVENT PURIFICATION

Peter J. Morgan, West Wellow, and Kenneth I. Wyllie, Milford on Sea, both of England, assignors to The International Synthetic Rubber Company, Limited, Southampton, England

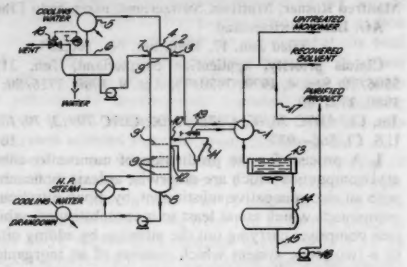
Filed Jan. 26, 1981, Ser. No. 228,611

Claims priority, application United Kingdom, Jan. 28, 1980, 8002776

Int. Cl.³ B01D *3/36*

U.S. Cl. 585—867 12 Claims

1. A Purification process for monomers, inhibitors and solvents used in the production of polymers by solution polymerisation consisting essentially of employing a single distillation column, supplying impure monomer and solvent to said distillation column which rejects light and heavy impurities from the top and bottom respectively and which dries the monomer-solvent mixture by azeotropic distillation, and withdrawing a



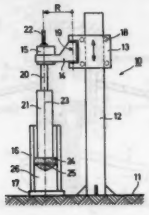
pure, inhibitor-free monomer solvent vapour as a side stream from a point intermediate the top and bottom of the column.

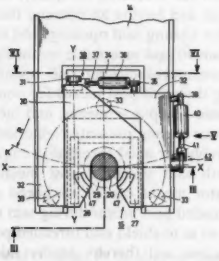
4,339,624

ELECTRODE CLAMPING DEVICE FOR ELECTROREMELTING PLANTS

Helmut Gröf, Bruchkobel; Uwe Reimpell, and Anton Wamser, both of Hanau am Main, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

Filed Feb. 11, 1980, Ser. No. 120,236
Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905752; Dec. 15, 1979, 2950531
Int. Cl.[3] H05B 7/10
U.S. Cl. 373—52 21 Claims





1. In an electroslag remelting plant having a mold, an electrode carrying device and an electrode clamping device having an electrode holding member for holding an electrode and at least one adjustment means for adjusting the angular position of the electrode holding member and thereby the held electrode, the improvement wherein the adjustment means comprises means defining solely two discrete pivot axes for the electrode holding member which are aligned substantially at right angles to one another and independently controllable adjustment drive means for effecting pivotal movement of the electrode holding member about the two axes.

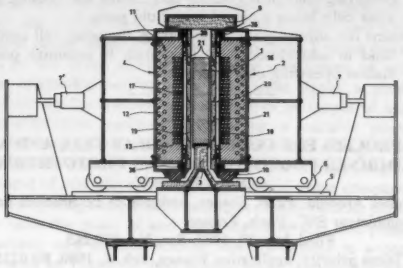
4,339,625

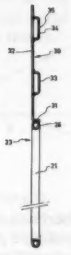
ELECTRIC INDUCTION FURNACE WITH ELECTRICALLY DISCONTINUED COOLING SCREEN

Jean Delassus, Montmorency; Bertrand de Lamberterie, and Jacques Michelet, both of Metz, all of France, assignors to Institut de Recherches de la Siderurgie Francaise (IRSID), Saint-Germain-en Laye, France

Filed May 19, 1980, Ser. No. 150,992
Claims priority, application France, May 23, 1979, 79 13428
Int. Cl.[3] H05B 6/42
U.S. Cl. 373—158 7 Claims

1. An electric furnace for induction heating of metallic products comprising a planar inductor incorporated in a pair of transversely spaced walls and comprising in each wall a plurality of substantially parallel conductors alternatingly connected at opposite ends in order to produce a sliding magnetic field, said spaced walls defining between themselves a space into which the product to be heated is to be inserted; a thin layer of refractory material of about three centimeter thickness at that side of each wall which borders said space; and an independent cooling screen between each wall and the respective layer of refractory material, said cooling screen being constituted by a





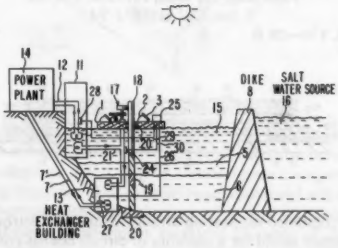
plurality of parallel adjacent non-magnetic metal tubes extending substantially normal to said conductors and being out of contact with each other to define between themselves electrically insulating spaces.

4,339,626

SOLAR POND POWER PLANT

Gerald M. Fisher, Palo Alto, and Henri J. R. Maget, Los Altos, both of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Apr. 16, 1981, Ser. No. 254,837
Int. Cl.[3] H01L 31/04; F03G 7/02
U.S. Cl. 136—248 9 Claims



1. A power station comprising a salt gradient pond, a heat engine, and a plurality of III–V photovoltaic concentrator solar cells;

means for utilizing the thermal energy available from the lower zone of said salt gradient pond to power said heat engine;

means for concentrating solar insolation upon said plurality of III–V photovoltaic concentrator solar cells;

means for cooling said plurality of solar cells and for combining the heat derived from said cells by said cooling means with the heat from said lower zone of said pond for powering said heat engine, said means for cooling said solar cells being a closed loop fluid path;

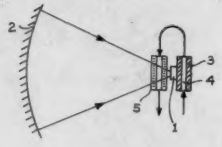
means for adjusting the flow rate of the solar cell cooling fluid in said closed loop fluid path to optimize power station operating characteristics.

4,339,627

PROCESS FOR COOLING A SOLAR CELL AND A COMBINED PHOTOVOLTAIC AND PHOTOTHERMIC SOLAR DEVICE

Jacques Arnould, Paris, France, assignor to Le Silicium Semiconducteur SSC, Paris, France

Filed Jan. 28, 1981, Ser. No. 229,263
Claims priority, application France, Feb. 1, 1980, 80 02254
Int. Cl.³ H01L *31/04*; F24J *3/02*
U.S. Cl. 136—259 **9 Claims**



3. In a combined photothermic and photovoltaic concentrated-light solar device comprising a photovoltaic cell having an integral radiator in which there flows a cooling fluid, there is further provided:

an assembly disposed in the path of the incident beam,

means for causing the fluid leaving the radiator to flow in said assembly,

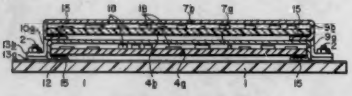
said assembly absorbing, in cooperation with the fluid, at least a part of the incident radiation situated outside the spectral response band of the photovoltaic cell and transmitting the heat collected to the cooling fluid.

4,339,628

RF SHIELDING SUPPORT FOR STACKED ELECTRICAL CIRCUIT BOARDS

Gabriel Marcantonio, and David M. Macklem, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Aug. 20, 1980, Ser. No. 179,799
Int. Cl.³ H05K *1/14*
U.S. Cl. 174—35 R **9 Claims**



1. A combined supporting arrangement and electromagnetic interference shield for a plurality of circuit boards comprising:

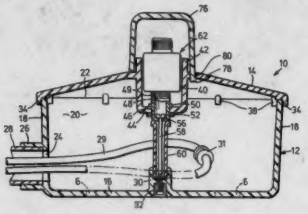
a baseboard, first fixture means formed on said baseboard and a plurality of circuit boards stacked on said baseboard, each circuit board shielded by a respective shield of conductive sheet material, each shield having flanges depending from opposed edge parts thereof, the flanges having turned-under parts and turned-out parts, the turned-under parts of any one of the shields embracing opposed edge parts of the circuit board shielded thereby and spacing that circuit board from an immediately underlying board, and the turned-out parts of any one of the shields formed with second fixture means engaging said first fixture means thereby clamping the shield to the baseboard.

4,339,629

JUNCTION BOX FOR HOUSING CABLE CONNECTIONS

Leonard D. Stanmore, 20 Gold Finch Ct., Bramalea, Ontario, Canada

Filed Jan. 22, 1980, Ser. No. 114,249
Claims priority, application Canada, Jan. 25, 1979, 320293
Int. Cl.³ H05K *5/00*
U.S. Cl. 174—50 **13 Claims**



1. In a junction box including receptacle means for housing cable connections and having an opening thereinto; separable closure means for closing said opening; and means for locking said closure means to said receptable means against separation, with said closure means closing said opening; said locking means including threaded post means for connecting said closure means to said receptacle means, and including separable locking terminator means presented exteriorally to said box selectively operable for axial threadable engagement and disengagement with said threaded post means, whereby said locking terminator means can be anchored against dislodgement to said threaded post means during said threaded engagement therewith so as to shield said threaded post means against unauthorized access and thereby render said closure means inseparable from said receptable means.

4,339,630

BUSHING DESIGN WITH CRIMPED ADAPTER FOR RETAINING CONDUCTOR

Edgar E. McQuay, Conover, N.C., assignor to General Electric Company, Philadelphia, Pa.

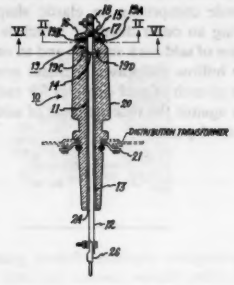
Filed Jun. 8, 1981, Ser. No. 271,203
Int. Cl.³ H01B *17/26*
U.S. Cl. 174—152 R **3 Claims**

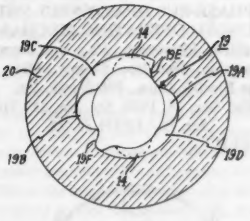
1. A high voltage bushing comprising a tubular insulator formed of an insulating material and having a central passageway extending through the length of the insulator, said insulator having an upper portion with a cavity which is formed in part by said passageway, said cavity having a lower retaining portion and an upper entrance portion, said entrance portion being constituted by the upper region of said passageway and having a first and a second entrance groove extending longitudinally along said passageway, said retaining portion comprising two locking gooves extending partially around said passageway and communicating with said first and second entrance grooves, said high voltage bushing further comprising a conductive rod within said passageway having a length greater than the length of said insulator, said conductive rod having notches at its laterally opposed sides and at a predetermined location along its length, means at one end of said conductive rod adapted to couple the rod to electrical apparatus, a cap at the other end of said conductive rod adapted to connect the rod to a high voltage power source, means at the other end of said rod for coupling said rod to said cap, the bushing further comprising;

retaining means effective when operable to hold said rod

against axial, radial, and angular movements within said passageway, said retaining means comprising;

a generally disc-shaped metallic adapter having a central opening receiving said rod and edge portions adjacent said central opening that are located in said notches in the rod, said adapter being crimped about said rod so that said edge portions tightly grip the rod at the notches, said opening in the adapter before crimping being sufficiently





large to allow said adapter to be slipped over one end of the rod into a position of alignment with said notches and thereafter crimped;

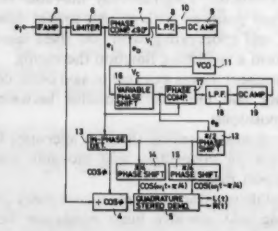
said adapter having projecting ears on its outer periphery which can be slid within said entrance grooves and into said locking grooves, said ears being located within said locking grooves in positions angularly displaced from said entrance grooves when said retaining means is operable.

4,339,631

PHASE CONTROL DEVICE

Akira Nishioka, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,312
Claims priority, application Japan, Dec. 1, 1978, 53-149481
Int. Cl.³ H04H *5/00*
U.S. Cl. 179—1 GS **5 Claims**



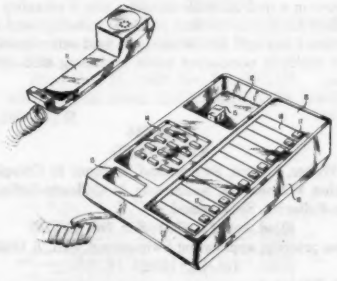
1. A received signal phase control circuit comprising: a voltage-controlled oscillator whose output frequency varies in accordance with a control signal coupled to an input of said voltage-controlled oscillator; a first phase comparator for comparing the phase of an output of said voltage-controlled oscillator with the phase of an input signal to said phase comparator, said control signal being produced in accordance with an output of said phase comparator and having a phase determined by the phase difference between said output of said voltage controlled oscillator and said input signal; a phase control device for controlling the phase of an output of said voltage-controlled oscillator comprising: a variable phase shifter for varying the phase of an output of said voltage-controlled oscillator in accordance with a control voltage coupled to an input of said phase shifter; and a second phase comparator for comparing the phase of an output of said variable phase shifter with the phase of said input signal to said first phase comparator, said control voltage being produced in accordance with an output of said second phase comparator and having a phase determined by the phase difference between said output of said phase shifter and said input signal to said first phase comparator, a signal having a constant phase difference with respect to said input signal being provided at said output of said variable phase shifter.

4,339,632

BUTTON ILLUMINATION FOR REPERTORY DIALER WITH LOW BATTERY VOLTAGE INDICATION

Scott H. Early, and David M. Savidge, both of Indianapolis, Ind., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 26, 1980, Ser. No. 210,673
Int. Cl.³ H04M *1/274, 1/02*
U.S. Cl. 179—90 B **8 Claims**



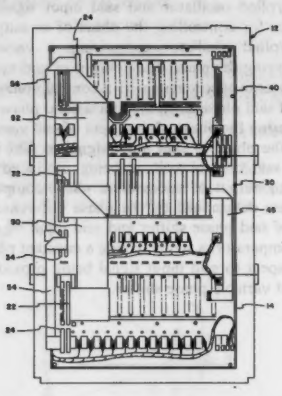
1. In a telephone set having a plurality of buttons, each button representing a plurality of digits precorded in a memory within the telephone set, a display circuit means comprising light-emitting elements, each element being associated wih one of selected buttons within the plurality of buttons for identification of buttons representing a preferred plurality of digits recorded in memory, and each one of the selected buttons having associated therewith a light-emitting element of a distinctive color, the display circuit means further including both battery supply means for powering the display circuit means, and circuit-connecting means responsive to the operation of a switch for applying power from the battery supply means to the display circuit means, and the light-emitting elements being arranged to provide a low battery indication when the potential of the battery supply means goes below a predetermined level.

4,339,633

MODULAR TELECOMMUNICATIONS SYSTEM

Fahim Ahmed, Guelph, Canada, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Oct. 6, 1980, Ser. No. 194,209
Int. Cl.³ H04Q *5/18*
U.S. Cl. 179—99 M **4 Claims**



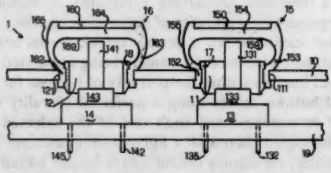
1. A modular time division telecommunications system comprising a plurality of terminals separated into groups, a group controller for each group and a central controller common to all groups, each controller including a data processor, memory and associated control circuits, each said controller including a physically short, time division data bus structure for intercommunicating between a controller, its memory and associated control circuits, each group controller having a group bus for transmitting control data between that group and the terminals in its group, the central controller having system bus structure for communicating in time division from between the centr' controller and the group controllers, with said central controller housed in a first modular housing, and a plurality of group controllers housed in another modular housing, and the interconnection from said first housing to said other housing comprises a multiple conductor cable including said system bus structure.

4,339,634

KEYBOARD

Eugen Weber, Hinwil, Switzerland, assignor to Obisphere Corporation Wilmington, Succursale de Collonge-Bellerive, Collonge-Bellerive, Switzerland

Filed Jan. 12, 1981, Ser. No. 224,167
Claims priority, application Switzerland, Feb. 7, 1980, 966/80
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A **9 Claims**



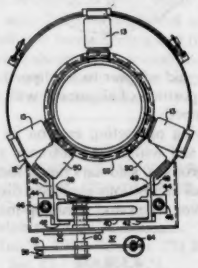
1. A keyboard suitable for input of data or control signals into an electronic measuring or computing device; said keyboard comprising a keyboard panel, a plurality of pushbutton switch elements arranged under said keyboard panel, each of said switch elements having a means for manual actuation extending from said switch element through a substantially circular opening of said keyboard panel; each of said openings of said keyboard panel being provided with a sealingly effective insert member comprising a resiliently elastic hollow capsule projecting upwards from said keyboard panel, each capsule comprising a substantially cylindrical neck section at one capsule end, an adjacently arranged deforming section and a keying area section at another capsule end; said neck section of said capsule having an outer diameter fitting into said circular opening of said keyboard panel and said deforming section of said capsule comprising an elastic shape-restoring bulge portion having an outer diameter which is greater than said outer diameter of said neck section; and an essentially rigid and substantially hollow cylindrical element arranged within said neck section of each of said capsules for radially pressing said neck section against the inner surface of said circular opening of said keyboard panel.

4,339,635

ISOLATED PHASE BUS DISCONNECT SWITCH WITH GROUNDED OPERATING MECHANISM

Alexander Zwillich, Pittsburgh, Pa., and Jayant M. Patel, Symmes Township, Hamilton County, Ohio, assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 24, 1980, Ser. No. 219,716
Int. Cl.³ H01H *31/32*
U.S. Cl. 200—48 R **7 Claims**



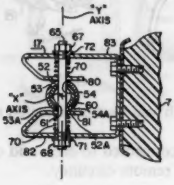
1. An isolated phase bus disconnect switch, comprising;
a hollow outer conductor at ground potential;
a fixed two-part inner conductor at high potential, insulatingly supported within said outer conductor and concentric therewith;
a movable inner conductor at high potential internal to said outer conductor, longitudinally movable between open and closed positions with respect to said fixed inner conductor, and cooperating with said fixed inner conductor to perform a switching function therewith;
movable support means external to said outer conductor for operating said movable conductor between open and closed positions;
insulating means extending through apertures in said outer conductor for connecting said movable conductor and said support means;
mechanical drive means external to said outer conductor for operating said movable inner conductor between open and closed positions; and
linkage means external to said outer conductor for connecting said drive means and said support means.

4,339,636

DISCONNECTING SWITCH HAVING IMPROVED SWITCH-BLADE HINGING STRUCTURE

Charles M. Cleaveland, N. Huntingdon, and Peter M. Kowalik, Trafford, both of Pa., assignors to Cleaveland/Price Enterprises, Inc., Trafford, Pa.

Filed Dec. 24, 1980, Ser. No. 219,883
Int. Cl.³ H01H *31/00*
U.S. Cl. 200—48 A 8 Claims



1. A disconnecting switch structure comprising a pair of spaced stationary first and second switch contact assemblies (13, 17), means defining an elongated pivotal conducting switch-blade (15) having a first end stationarily hinged adjacent the first spaced stationary switch contact assembly (17) for pivotal motion thereabout and having its other free end available for swinging pivotal motion into and out of contacting engagement with the second spaced stationary switch contact assembly (13), said first end of the pivotal switch-blade (15) having a slotted hole (52) provided therein, including a switch blade-plug (60) having a hole (61) provided therein, inserted within the hinging end of the disconnecting switch-blade (15), means defining a hinge pin (65) located adjacent the first switch contact assembly (17) and passing through both the slotted hole (52) of the switch-blade and also through the hole (61) of said inserted switch blade-plug (60), operating means for causing pivotal swinging motion of the elongated switch-blade (15) about said hinge means (17), whereby during the initial opening motion of the disconnecting switch there first occurs rotative motion of the switch-blade (15) about the longitudinal "X" axis, with the switch-blade rotatively sliding upon the blade plug (60) and with the switch-blade being axially retained along the longitudinal "X" axis by the sides of the slotted holes (52) in the switch-blade bearing against the hinge pin (65), and during the final opening motion of the disconnecting switch the switch-blade (15), transverse blade-plug (60) and hinge pin (65) pivot on the transverse "Y" axis causing the outer free end of the disconnecting switch-blade (15) to separate from the second switch contact assembly (13) thereby providing an open-circuit, visible disconnecting gap therebetween.

4,339,637

ELECTRICAL CONTAINER

William H. Elliott, 134 Howard Rd., Rochester, N.Y. 14606

Continuation-in-part of Ser. No. 12,578, Feb. 15, 1979, abandoned. This application Jan. 23, 1981, Ser. No. 227,622
Int. Cl.³ H01H *9/00*; H01R *13/42*
U.S. Cl. 200—51.09 7 Claims

1. An electrical container for completing an electric circuit comprising:

(a) an electrically insulating housing;

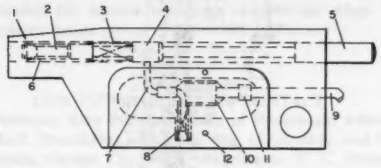
(b) an electrically conductive, collapsible gripper mechanism located inside said housing for fastening to an electrically conductive wire;

(c) a spring located inside said housing wherein said spring is attached to said gripper mechanism and is adapted to return said gripper mechanism inside said housing;

(d) an electrically conductive conductor bar located inside said housing wherein said conductor bar is attached to said spring and is adapted to conduct an electric current from said electrically conductive wire;

(e) an electrically conductive contact rod in contact with said conductor bar only when said gripper mechanism is retracted within said housing;

(f) an electrically insulating pusher means wherein one end of said pusher means protrudes from said housing and wherein the other end of said pusher means is located inside said housing and is attached to said conductor bar, wherein upon



application of pressure to the end of said pusher means protruding from said housing said pusher means slidably moves said conductor bar out of contact with said contact rod, causes said spring to partially compress, and said gripper mechanism to protrude from said housing and to open, and upon release of pressure from said pusher means said gripper mechanism closes and retracts within said housing, said spring decompresses, and said conductor bar moves into contact with said contact rod; and

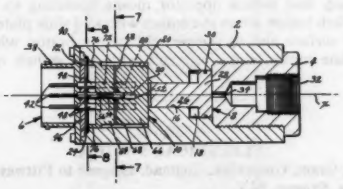
(g) an electric wire connected to said contact rod.

4,339,638

ELECTRICAL SWITCH

Daniel J. Lascelles, Deland, Fla., and Jack M. Walker, Meggen, Switzerland, assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 15, 1980, Ser. No. 197,199
Int. Cl.³ H01H *39/00*; F42C *19/06*; H01H *1/00*; H01R *4/10*
U.S. Cl. 200—52 R 16 Claims



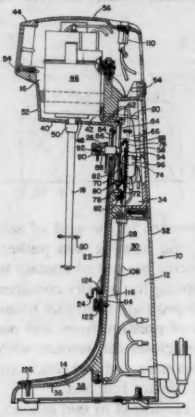
1. An electrical switch comprising: a body, a plurality of parallel pins mounted on the body, the pins being electrically conductive; a dielectric member mounted on the body and containing holes with which the pins align, the dielectric member and the pins being arranged such on the body that the relative positions of the dielectric member and the pins can be changed from a first position to a second position along the axis of the pins; and an electrically conductive contact plate mounted on the dielectric member and having apertures that align with the holes in the dielectric member, the apertures being configured to, in at least one of the positions, receive the pins while gripping the pins tightly along their edges, so as to change the condition of an electrical circuit to which the pins are connected.

4,339,639

DRINK MIXER

Bruno M. Valbona, Farmington, and William C. Pound, Burlington, both of Conn., assignors to Dynamics Corporation of America, Greenwich, Conn.

Filed Feb. 17, 1981, Ser. No. 234,898
Int. Cl.³ H01H 3/00
U.S. Cl. 200—52 R 7 Claims



1. In combination with a drink mixer having an upright standard with a frontwall and spaced sidewalls and a motor housing containing an electric motor mounted upon said standard, a switch assembly for controlling said motor comprising a bracket mounted upon said standard, a flat slide plate mounted for sliding movement on said bracket, one terminal end surface of said slide plate operating as a switch control surface, said slide plate being movable on said bracket from a rest position to an activate position by an actuator connected thereto and extending through said standard frontwall, and switch means mounted upon said bracket and having switch operator means positioned to contact said slide plate switch control surface when the slide plate is in the rest position, said slide plate moving out of contact with said switch operator means when the slide plate moves toward the activate position, said switch means including a normally closed microswitch having a switch button which opens said microswitch when depressed, said switch operator means operating to depress said switch button when in contact with said slide plate switch control surface and to release said switch button when said slide plate moves out of contact with said switch operator means.

4,339,640

ELECTRICAL SWITCH

John T. Grant, Guestwick, England, assignor to Pittway Corporation, Syosset, N.Y.

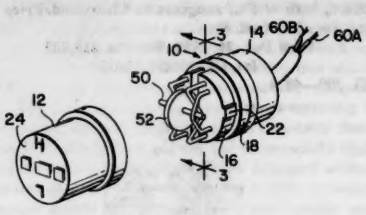
Filed Aug. 13, 1980, Ser. No. 177,566
Int. Cl.³ H01H 35/02
U.S. Cl. 200—61.45 R 13 Claims

1. A vibration sensor comprising

a base,

first and second support structures on said base, each said support structure including a pair of spaced juxtaposed electrical contact members, each said pair of contact members having electrically spaced contact surfaces disposed at an angle to one another that define a support region,

an elongated crossbar element having two spaced apart electrically conductive portions, each said electrically conductive portion being supported on the contact surfaces in a corresponding one of said support regions for completing an electric circuit between that corresponding pair of contact members and for movement away from said contact members under the influence of acceleration



forces to which said base is subjected to open said electric circuit, and

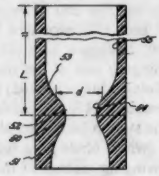
terminal means connected to each said contact member for connection to remote circuitry.

4,339,641

NOZZLE FOR A PUFFER-TYPE CIRCUIT BREAKER

Heinz O. Noeske, Cherryhill, N.J., assignor to General Electric Company, Schenectady, N.Y.

Filed May 27, 1980, Ser. No. 153,580
Int. Cl.³ H01H 33/70
U.S. Cl. 200—148 R 6 Claims



1. A puffer-type gas-blast circuit breaker comprising:

a pair of separable contacts, said contacts being in abutting engagement when said circuit breaker is carrying normal load current, at least one of said pair of contacts being movable generally axially relative to the other of said pair of contacts to a position separated from the other of said pair of contacts during a high voltage circuit interrupting operation, thereby establishing an arc between said separated contacts;

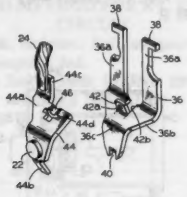
a nozzle of electrically insulating material disposed concentrically with said contacts, said nozzle comprising an upstream section, a throat section having an internal diameter approximately equal to the outside diameter of one of said contacts which is disposed within said throat when said contacts are in abutting engagement, and a downstream section including a bell-shaped section to provide initial rapid expansion of gases passing through said throat, said bell-shaped section being disposed adjacent said throat and said downstream section also including a substantially cylindrical, flow-confining section downstream of said bell-shaped section to limit further expansion of said gases, said flow-confining section exhibiting an outward taper, in a direction downstream of said throat, of between about 0° and about 5°; and

injection means operable during a circuit interrupting operation for forcing a stream of high velocity insulating gas through said nozzle in a generally axial direction, such that said flow of gas passes through said nozzle to surround said arc drawn during said circuit breaker operation, such that said gas passes serially through said upstream section, and said throat and said bell-shaped downstream section.

4,339,642
CURRENT SWITCHING MEMBER FOR CIRCUIT BREAKERS

Raymond K. Seymour, Plainville; Frank H. Murphy, and Lelio C. Vergnano, both of West Hartford, all of Conn., assignors to General Electric Company, New York, N.Y.

Filed Jan. 19, 1981, Ser. No. 225,951
Int. Cl.³ H01H *1/22*
U.S. Cl. 200—153 G **6 Claims**



1. In an electric circuit breaker having a spring-power toggle-type operating mechanism, an improved current switching member comprising, in combination:

A. an elongated steel arm including

(1) an upper end portion accommodating pivotal connection with a circuit breaker operating handle,

(2) means on said arm intermediate its ends to anchor the hooked one end of a circuit breaker operating mechanism tension spring, and

(3) a lower extremity portion providing a backing surface;

B. a copper carrier including

(1) a body, and

(2) means capturing said carrier to said arm with a first surface of said body in intimate relation with said backing surface, said means including a tang extending from said body and clenched in engaging relation with said arm lower extremity portion;

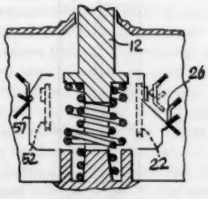
C. an electrically conductive braid having one end affixed in electrical connection with said carrier; and

D. a circuit breaker movable contact affixed to a second surface of said body opposed from said first surface in electrical connection with said carrier.

4,339,643
PUSH-BUTTON KEY SWITCH

Gunter Murmann, Bavaria, Fed. Rep. of Germany, assignor to Cherry Electrical Products Corporation, Waukegan, Ill.

Filed Jun. 18, 1980, Ser. No. 160,640
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952107
Int. Cl.³ H01H *1/26, 3/12*
U.S. Cl. 200—159 A **11 Claims**



1. A push button key switch, comprising:

at least one electrically conducting terminal;

at least one blade means for flexing in one direction to define a first switching relationship with respect to said terminal, and for flexing in another direction to define a second switching relationship with respect to said terminal; and

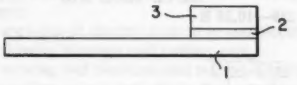
actuator means for selectively moving longitudinally in an actuating direction to establish said first switching relationship and for selectively moving in an opposite, return direction to establish said second switching relationship;

said actuator means having cam means for engaging and pivotally flexing said blade means in the actuating direction so that the blade means resists the movement of the actuator means over a particular distance in the actuating direction, the cam means thereafter disengaging from said blade means to allow the blade means to flex in said one direction and establish the first switching relationship, the cam means having means for engaging said blade means and flexing the blade means in said other direction to establish the second switching relationship, when the actuator means moves in the return direction.

4,339,644
LOW-POWER ELECTRIC CONTACT

Fritz Aldinger; Elke Biberbach, both of Rodenbach; Albrecht Bischoff, Bruchköbel, all of Fed. Rep. of Germany, and Nils Harmsen, Garden City, N.Y., assignors to W. C. Heraeus GmbH, Hanau, Fed. Rep. of Germany

Filed Oct. 1, 1980, Ser. No. 193,178
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1979, 2940772
Int. Cl.³ H01H *1/02*
U.S. Cl. 200—266 **15 Claims**

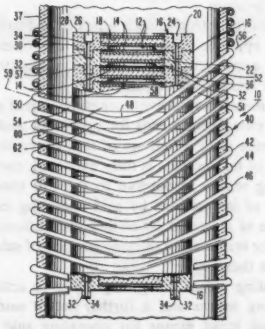


1. A low-power electrical contact comprising an outer contact layer integrally bonded to a substrate, said substrate comprising a copper-base alloy, and said contact layer consists essentially of 39% gold, 22% silver, 37% palladium, and 2% indium.

4,339,645
RF HEATING COIL CONSTRUCTION FOR STACK OF SUSCEPTORS

Edward A. Miller, Morrisville, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 3, 1980, Ser. No. 165,740
Int. Cl.³ H05B *6/40*; C23C *13/08*
U.S. Cl. 219—10.49 R **6 Claims**



1. In an apparatus for inductively heating a plurality of substantially thermally isolated, stacked, spaced susceptors in which substrates to be heated are held, said susceptors comprising disc-like elements stacked one over another in parallel planes, the stack forming a cylinder, said apparatus including a stationary coil for inductively heating the stack of susceptors, the coil comprising a plurality of turns wound about the pe-

ripheral curved surface of said cylinder, the improvement in the construction of the coil to improve the uniformity of the heating of said susceptor elements as they rotate in the inductive field of the coil, in parallel planes perpendicular to the axis of the cylinder, comprising:

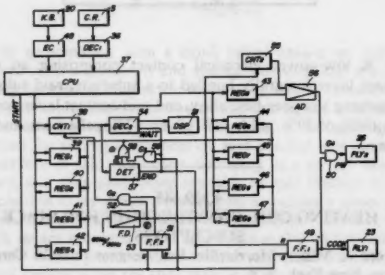
each turn of at least most of the turns of said coil being saddle-shaped such that each said turn substantially inductively heats a plurality of adjacent ones of said susceptor elements, and adjacent ones of said turns being spaced sufficiently close to one another that each susceptor is substantially inductively heated by a plurality of adjacent turns of said coil, whereby non-uniformities in the heating of any individual susceptor by one turn of said coil is compensated for by the heat contributions received from other adjacent turns of the coil.

4,339,646

COOKING OPERATION ANNOUNCEMENT MEANS OF MICROWAVE OVEN

Kelichiro Doi, Izumi; Minoru Makita, Higashiosaka, and Masaaki Kowada, Kaizuka, all of Japan, assignors to Sharp Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1978, Ser. No. 974,607
Claims priority, application Japan, Jul. 4, 1978, 53-81764
Int. Cl.³ H05B 6/68
U.S. Cl. 219—10.55 B **18 Claims**



1. A heating appliance having an energizing means for starting the energization of said appliance in response to actuation thereof, comprising:

input means for introducing a series of instructions into said heating appliance for controlling the operation of said heating appliance, said series of instructions including multiple sets of instructions;

operating means responsive to energization of said appliance by said energizing means for operating said appliance in accordance with a first set of said instructions until said first set of instructions is fully executed; and

terminating means responsive to the full execution of the first set of instructions by said operating means and the presence of a second set of said instructions at said input means for terminating the energization of said appliance in response thereto;

said operating means being responsive to actuation of said energizing means and a further set of said instructions from said input means for operating said appliance in accordance therewith in the event that said second set of instructions has been executed by said heating appliance; and

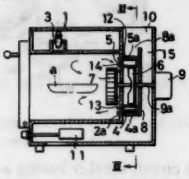
said operating means operating said appliance in accordance with said further set of instructions exclusive of said energizing means in the event that said second set of instructions has not been introduced into said heating appliance.

4,339,647

DUAL FAN MEANS FOR HEATING CHAMBER OF MICROWAVE COOKING DEVICE

Minoru Inayama, Komaki, and Hideyuki Hamanaka, Konan, both of Japan, assignors to Rinnai Kabushiki Kaisha, Fukuzumu, Japan

Filed Apr. 17, 1980, Ser. No. 142,371
Claims priority, application Japan, Apr. 24, 1979, 54/54117[U]
Int. Cl.³ H05B 6/64
U.S. Cl. 219—10.55 R **12 Claims**



1. A microwave cooking device including a cooking device main body provided therein with (a) a heating chamber for receiving foodstuffs to be cooked, (b) a magnetron for irradiating microwaves onto the interior of the heating chamber and (c) an air charging and discharging fan for forcing air to charge into and to discharge from the heating chamber through an air charging opening and an air discharging opening disposed in the heating chamber, in which the improvement comprises:

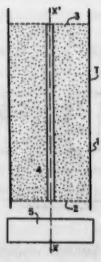
A circulation fan separate from the air charging and discharging fan, said circulation fan being disposed within said heating chamber for circulation of air therein, thereby to prevent the accumulation of water vapor within said chamber, and said circulation fan being connected to a shaft common to such air charging and discharging fan.

4,339,648

PROCESS AND APPARATUS FOR SUBJECTING A MATERIAL TO ELECTROMAGNETIC WAVES

Olivier A. L. Jean, "Les Trois Chenes" 14, avenue Beranger, 78600 Maisons Laffitte, France

Continuation-in-part of Ser. No. 849,182, Nov. 7, 1977, Pat. No. 4,221,948. This application Apr. 24, 1980, Ser. No. 143,350
Claims priority, application France, Nov. 17, 1976, 76 34594
The portion of the term of this patent subsequent to Sep. 9, 1997, has been disclaimed.
Int. Cl.³ H05B 6/72
U.S. Cl. 219—10.55 M **8 Claims**



1. Process for treating a confined material with microwaves consisting in entirely filling a receptacle with the material to be treated, the receptacle having a longitudinal axis and provided with an entirely internal, fixed antenna which is directly connected to a microwave generator and extends along a notional

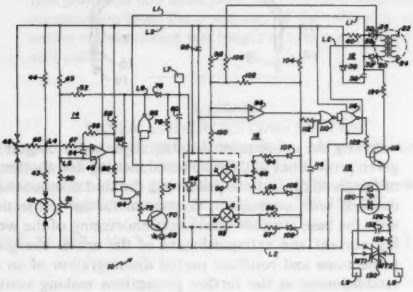
cylinder having the same axis as the receptacle, which is made with a plurality of elements able to radiate microwave energy, the antenna extending the full height of the material and is in direct contact with the material to be treated and radiating microwave energy from the antenna directly to the material to be treated.

4,339,649

APPARATUS AND METHOD FOR R-C TIME CONSTANT CIRCUIT

James A. Hronchek, Kokomo, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 3, 1980, Ser. No. 156,122
Int. Cl.³ H05B 1/02
U.S. Cl. 219—10.55 B 5 Claims



1. In a time constant circuit of the type having a resistance-capacitance circuit including a capacitor and a resistance network connected in series with said capacitor, wherein the improvement comprises:

digital gate means having an output and at least one input, said output being electrically coupled to said resistance-capacitance circuit, said digital gate means being adapted to provide a first digital output voltage level for charging said capacitor through said resistance network and a second digital output voltage level for discharging said capacitor through said resistance network; and

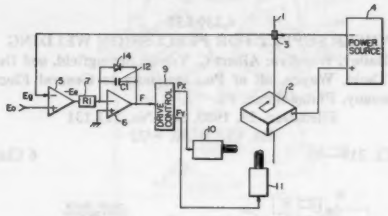
circuit means connected to said input of said digital gate means for controlling said output of said gate means in response to the voltage charge of said capacitor and including voltage comparator means having an output connected to said gate means input, said comparator means having one input connected to a reference voltage source and another input connected between said capacitor and said resistance network, said reference voltage source including biasing circuit means connected to said voltage comparator means output for biasing said one input of said voltage comparator means in response to said voltage comparator means output, said biasing circuit means including a first pair of resistors connected in series and having one end of said first pair connected to a first fixed voltage potential and another end of said first pair connected to a second fixed voltage potential, said biasing circuit means further including a second pair of resistors connected in series and having one end thereof connected to said first fixed voltage potential and another end thereof connected to the connection between said first pair of resistors, said voltage comparator means output being connected to the connection between said second pair of resistors, and said voltage comparator having a positive input connected to the connection between said first pair of resistors and a negative input connected to the connection between said capacitor and said resistance network with the other end of said capacitor connected to said first fixed voltage potential.

4,339,650

ELECTRIC DISCHARGE MACHINING APPARATUS

Yutaka Tanaka; Takeshi Yatomi, and Yoshio Ozaki, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,806
Int. Cl.³ B23P 1/12
U.S. Cl. 219—69 G 4 Claims



1. An electric discharge machining apparatus for cutting and shaping a workpiece into an article having a desired configuration comprising:

an electrode movable relative to said workpiece with a cutting gap being formed between said electrode and said workpiece;

means for applying an electric current to said electrode, said current flowing through said cutting gap;

means for moving said electrode and said workpiece relative to one another to cut and shape said workpiece into a desired configuration;

comparator means for comparing the voltage across said cutting gap with a reference voltage to produce an error voltage signal;

means for integrating said error voltage signal to produce an output control signal;

means for controlling the speed of said electrode relative to said workpiece in accordance with said output control signal of said integrating means; and

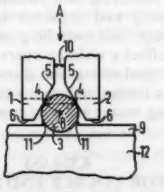
means for maintaining the output of said integrating means at a substantially zero level when the integrated value shifts towards a negative value.

4,339,651

METHOD FOR SOLDERING LEADS TO ELECTRICAL COMPONENTS

Hubert Kraus, Regensburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 8, 1980, Ser. No. 185,396
Int. Cl.³ B23K 1/02
U.S. Cl. 219—85 CM 11 Claims



1. A method for soldering a lead to an electrical capacitor having a synthetic film as a dielectric, a regenerable thin coating and a front contact layer of solder metal, comprising the steps of: positioning a lead over the front contact layer; pressing two electrodes onto the lead to contact the lead at contact surfaces of the electrodes; positioning the contact surfaces of the electrodes to contact the lead along spaced apart parallel

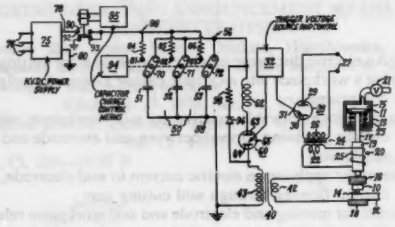
contact lines directly across from each other which extend longitudinally along the lead on a periphery thereof substantially along an entire desired region of melted solder engagement between the lead and the contact layer and which together with a longitudinal central axis of symmetry of the lead define points of a prism-like region of triangular cross-section within the lead; and applying a current to the electrodes which flows substantially perpendicular to the lead axis to heat the lead and press it into the solder which thereby melts.

4,339,652

POWER SUPPLY FOR PERCUSSION WELDING

Cecil Bailey, Woodlyn; Albert C. Young, Springfield, and Dezso D. Thold, Wayne, all of Pa., assignors to General Electric Company, Philadelphia, Pa.

Filed Dec. 29, 1980, Ser. No. 221,131
Int. Cl.³ B23K 9/22
U.S. Cl. 219—95 **6 Claims**



1. In percussion welding equipment in which an electric arc is initiated between a pair of spaced-apart work pieces during the early stages of a welding operation and means is provided for applying to one of said work pieces a welding force that drives said work pieces together following arc-initiation and subsequent spread-out of the arc, thereby driving into engagement regions of the work pieces that have been heated to welding temperature by said arc, a power supply for supplying welding energy through said arc comprising:

(a) a welding transformer having a primary winding and a secondary winding across which welding electrodes are adapted to be connected for supplying maximum welding current of 100,000 amperes or more between said secondary winding and said pair of work pieces,

(b) a capacitor bank having a pair of output terminals,

(c) means for selectively connecting said output terminals across said primary winding comprising electronic switching means connected in series with said primary winding and said terminals,

(d) means for charging said capacitor bank to a predetermined voltage level in preparation for a welding operation and for discontinuing charging when said voltage level is reached,

(e) means for rendering said switching means conductive, thereby causing said capacitor bank to forwardly discharge through said switching means and said primary winding to effect a welding operation, and

(f) means for controlling the duration of said discharge comprising a tuning inductance connected in series with said switching means and said primary winding.

4,339,653

METHOD FOR DOUBLE END STUD WELDING

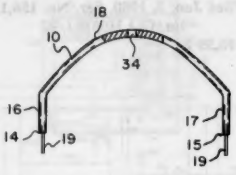
Thomas E. Doyle; Daniel Hauser; Michael D. Hayes, all of Columbus, and David C. Martin, Worthington, all of Ohio, assignors to Omark Industries, Inc., Portland, Oreg.

Filed Nov. 19, 1979, Ser. No. 95,322
Int. Cl.³ B23K 9/20
U.S. Cl. 219—99 **4 Claims**

1. In the art of stud welding of a metallic stud, having a plurality of ends, to another metallic base member, the method permitting simultaneous welding of each end of the base member by the stud end welding technique comprising:

supporting each end of the metallic member above the base member by at least one elongated relatively thin metallic projection; and

urging the projections of each end of the stud into contact with the base member while maintaining a current density in the projections during welding at sufficient density to disintegrate only a portion of given projections as they contact the base member with consequent arc initiation between the given projections and the base member



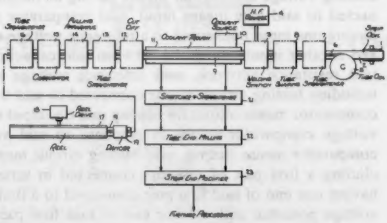
whereby the consequent disintegration and arcing at the given projections will create metal melting and shortening of the given projections permitting the stud to sequentially descend with consequent contact of further projections with the base member resulting in shortening of the welding current and extinguishment of the arc at the given projections and resultant partial disintegration of an arc establishment at the further projections making contact with the base member on a continuing and random basis between all projections of all ends of the stud until the projections are consumed and the ends of the stud contact the base member.

4,339,654

METHODS FOR THE MANUFACTURE OF HEAT EXCHANGER PANELS

Robert R. Harriau, Old Greenwich, and Humfrey N. Udall, Darien, both of Conn., assignors to Thermatool Corp., Stamford, Conn.

Filed Feb. 19, 1980, Ser. No. 122,467
Int. Cl.³ B23K 11/32
U.S. Cl. 219—107 **7 Claims**



1. A method for making a heat exchanger element which comprises:

advancing metal tubing longitudinally thereof toward a weld point while simultaneously advancing a metal strip in its length direction toward said weld point for joining said tubing and said strip at said weld point, said strip being wide relative to the cross-sectional dimension of said tubing and being thin relative to its width;

heating said tubing and said strip at their surfaces to be joined to welding temperature by the time that they reach said weld point by supplying high frequency, electric

current to said strip and said tubing in advance of the weld point;

pressing the tubing and the strip together at the weld point to form a weld therebetween and to form a tube-strip combination;

continuing the advance of the tube-strip combination along a path extending from said weld point to a collection point spaced from said weld point;

collecting the tube-strip combination at said collection point, and after a predetermined length thereof has been collected, discontinuing the advance of the tubing and strip and the welding together of tubing and strip;

thereafter, advancing the tube-strip combination in the reverse direction from said collection point toward said weld point and along said path; and

as a predetermined length of the tube-strip combination reaches a predetermined position intermediate said collection point and said weld point, severing said length of said combination from the remainder of the tube-strip combination and removing said length of said combination from said path.

4,339,655

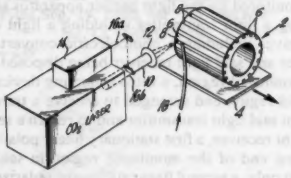
LASER UNDERCUTTING SYSTEM

Hugo C. Lauroesch, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 4,201, Jan. 17, 1979, abandoned. This application Jan. 28, 1981, Ser. No. 229,279

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LJ **14 Claims**



1. A method of undercutting a silica base material below the surface of adjacent metal faces which comprises ablating said silica base material by means of a focused beam of a laser until a predetermined depth of undercut is obtained.

4,339,656

GLOW DISCHARGE HEATING APPARATUS

Hirotsugu Komura; Shigeo Ueguri, and Youichiro Tabata, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

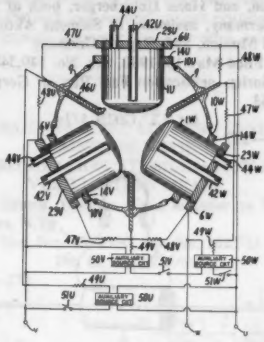
Division of Ser. No. 6,780, Jan. 26, 1979. This application May 22, 1980, Ser. No. 152,563

Claims priority, application Japan, Feb. 7, 1978, 53-13090

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—494 **3 Claims**

1. A glow discharge heating apparatus comprising: a plurality of discharge electrodes opposite one another through predetermined gaps; main electric source means connected to said plurality of discharge electrodes to successively cause glow discharge therebetween, each of said glow discharges supplying thermal energy to the discharge electrode acting as a cathode during the associated glow discharge; an auxiliary electrode positioned relative to said discharge electrodes for controlling the glow discharges developed between said discharge electrodes according to the electrical potential of said auxiliary electrode; controllable auxiliary electric source means for biasing said auxiliary electrode to establish an auxiliary discharge from said auxiliary electrode and control said glow discharges; a liquid to be heated flowing through said discharge electrodes to be heated with said thermal energy; and a temperature sensor operatively coupled to a selected one of said discharge electrodes to sense a temperature of said heated liquid to feed a signal representative of the measured temperature back to said auxiliary electric source means to control an



auxiliary discharge current from said auxiliary electrode for controlling said glow discharges and thereby controlling the temperature of said heated liquid.

4,339,657

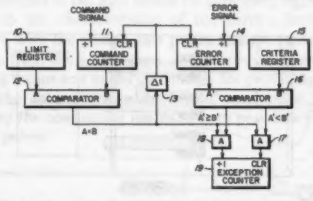
ERROR LOGGING FOR AUTOMATIC APPARATUS

David D. Larson, Boulder, Colo., and Stanley T. Riddle, Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 6, 1980, Ser. No. 118,953

Int. Cl.³ G06F *7/62, 7/02*

U.S. Cl. 235—92 QC **4 Claims**



1. In a control system having means for supplying command signals to initiate system functions and means for producing error signals indicating system malfunctions, the combination comprising:

means responsive to said command signals for producing a control signal after a certain number of command signals have been supplied;

error counter means responsive to said error signals for storing a count value representing the number of error signals which have occurred;

sensing means responsive to said error counter means for producing a value signal when said error counter means is storing a value not less than a predetermined value; and

exception counter means responsive to the value signal and said control signal for incrementing said exception counter means by said control signal if said value signal is present and resetting said exception counter means by said control signal if said value signal is not present.

4,339,658

METHOD AND A DEVICE FOR MONITORING AND MINIMIZING LIGHT LOSSES AT A SPLICING LOCATION FOR GLASS FIBER CABLES

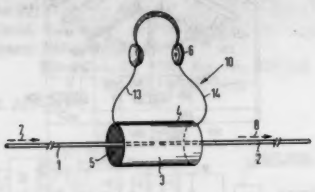
Ingrid Fromm, and Hans Unterberger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 13, 1980, Ser. No. 149,345

Claims priority, application Fed. Rep. of Germany, Jun. 8, 1979, 2923363

Int. Cl.³ G02B 5/14

U.S. Cl. 250—227 13 Claims



1. A method for monitoring and minimizing splicing losses in the splicing of glass fiber cables, comprising the steps of passing a light through one of the cables to be spliced, sensing the intensity of the light loss at the location of the splice photoelectrically to create a signal, evaluating the created signal, and during the evaluation of the created signal, adjusting the position of the two cable ends being spliced together relative to each other to obtain a minimum signal produced by a minimum loss of light at the splicing location.

4,339,659

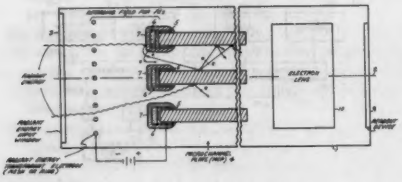
IMAGE CONVERTER HAVING SERIAL ARRANGEMENT OF MICROCHANNEL PLATE, INPUT ELECTRODE, PHOSPHOR, AND PHOTOCATHODE

Charles B. Johnson, Fort Wayne, Ind., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Oct. 20, 1980, Ser. No. 200,161

Int. Cl.³ H01J 31/50, 40/12

U.S. Cl. 250—213 VT 18 Claims



1. A radiant energy image converter comprising:

a vacuum envelope having a longitudinal axis;

input means for radiant energy images disposed coaxial of said axis at one end of said envelope;

a microchannel plate disposed coaxial of said axis within said envelope in a spaced relationship with said input means, said plate including an input electrode;

a radiant energy sensitive phosphor means applied directly to said input electrode;

a photocathode applied to said phosphor means;

a radiant energy transparent mesh electrode disposed within said envelope coaxial of said axis between and spaced from said input means and said photocathode;

means coupled between said mesh electrode and said input electrode to provide a retarding field therebetween to reflect photoelectrons produced at said photocathode into said plate;

a readout means disposed coaxially of said axis at the other end of said envelope; and

an electron lens means disposed within said envelope coaxially of said axis between an output of said plate remote from said input means and said readout means to focus photoelectrons emanating from said output of said plate onto said readout means to provide a discernible output related to said radiant image.

4,339,660

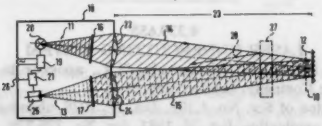
REFLECTION LIGHT BARRIER APPARATUS FOR RECOGNIZING BOTH STRONGLY AND WEAKLY REFLECTING OBJECTS

Karl-Otto Buchholz; Jürgen Erdmann, both of Waldkirch, and Günter Fetzer, Gundelfingen, all of Fed. Rep. of Germany, assignors to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Filed May 15, 1980, Ser. No. 150,093

Int. Cl.³ G01V 9/04

U.S. Cl. 250—221 4 Claims



1. Reflection light barrier apparatus for recognizing both strongly reflecting and weakly reflecting objects within a region monitored by the light barrier apparatus said apparatus comprising a light transmitter including a light source and a light receiver including a photoelectric converter, said light transmitter and said light receiver being disposed at a first end of said monitored region, a retro-reflecting device at a second end of said region and arranged to receive a transmitted light beam from said light transmitter and to return a reflected beam to said light receiver, a first stationary linear polarizer arranged at said first end of the monitored region in said transmitted light beam only, a second linear stationary polarizer at said first end of the monitored region, said second polarizer being crossed at substantially 90° with respect to said first polarizer and arranged in said reflected beam optically in front of said photoelectric converter and threshold circuit discriminating means associated with the output of said photoelectric converter and adapted to indicate whether the signal received from said photoelectric converter lies above a first threshold, thus indicating that said monitoring region is uninterrupted, or below said threshold, thus indicating that the monitoring region is interrupted by one of a weakly and a strongly reflecting object and wherein said retro-reflecting device is adapted to produce depolarization of said transmitted light beam.

4,339,661

FIBRE OPTIC TRANSDUCER

Gillies D. Pitt, Walden, and Roger J. Williamson, Harlow, both of England, assignors to ITT Industries, Inc., New York, N.Y.

Filed Jul. 11, 1980, Ser. No. 167,407

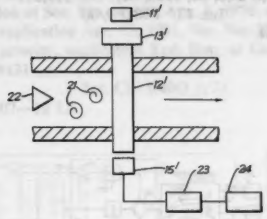
Claims priority, application United Kingdom, Aug. 23, 1979, 7929353

Int. Cl.³ G08B 13/22

U.S. Cl. 250—227 1 Claim

1. In a transducer arrangement, the combination comprising: a pipeline; a coherent light source; optical detection means having an output; a flexible optical transmission line mounted to span the interior of said pipeline and coupled between said light source and said detection means; and a bluff body mounted in said pipeline upstream of said flexible optical transmission line, said flexible optical transmission line providing a plurality of light paths between said light source and said detection means, said flexible optical transmission line generating an interference speckle pattern in an area including said

detection means, a predetermined flexure of said flexible transmission line changing the relative lengths of a plurality of light paths therethrough, said change of paths causing a displacement of said speckle pattern, said displacement producing a corresponding change in the output of said detection means,

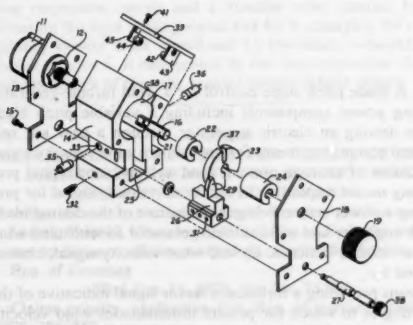


said flexible optical transmission line including a multimode optical fiber of a flexibility such that vortices, when produced by and when emanating from said bluff body, pass in proximity to said transmission line and produce a plurality of said predetermined flexures.

4,339,662
SAFETY SELECTOR SWITCH INCLUDING PHOTOELECTRIC DETECTION

William J. Basch, and Charles D. Moore, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 19, 1980, Ser. No. 188,654
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—229 **5 Claims**

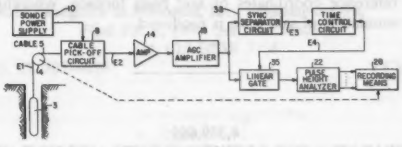


1. A locking device for an electrical component comprising,
a housing attached to a rotatable shaft of an electrical component,
a plurality of circular stop plates, one of which is of greater diameter than any other circular stop plate, said circular stop plates being mounted on said rotatable shaft within a bore of said housing, each said circular stop plate having a first cut-out portion in its periphery and said stop plate of greater diameter having a second cut-out portion in its periphery providing a passageway for light,
a second shaft slidably attached in said housing and movable in a direction parallel to the longitudinal axis of said rotatable shaft and having an arm selectively positionable in said first cut-out portions of said stop plates to limit rotation of said rotatable shaft, said cut-out portions in each stop plate being arranged to permit successive translations of said arm into cut-outs of adjacent stop plates after each stop plate has been rotated to a predetermined position,
light emitting means including a first light source positioned adjacent one side of said stop plate of greater diameter, and
light detecting means including a first light detector positioned adjacent the opposite side of said stop plate of greater diameter whereby light from said first light source must pass through said second cut-out portion in said stop plate of greater diameter to shine-upon said first light detector.

4,339,663
PULSED NEUTRON WELL LOGGING SYSTEM AND METHOD WITH SYNCHRONIZATION/STABILIZATION PULSE VERIFICATION MEANS

Winthrop K. Brown, Bellaire, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Jun. 25, 1980, Ser. No. 162,713
Int. Cl.³ G01V *5/00*
U.S. Cl. 250—270 **8 Claims**



1. A well logging system for investigating an earth formation traversed by a borehole comprising a well logging tool including means for periodically bombarding the earth formation with neutrons, means for detecting gamma radiation from the earth formation and providing data pulses corresponding in pulse height and frequency to the detected gamma radiation, and means for providing sync/stab pulses, time related to the neutron bombardments of the formation; cable means connected to the detecting means and to the sync/stab pulse means for conducting the data pulses and the sync/stab pulses from the well logging tool within the borehole to the surface; and surface means including gate means connected to the cable means for passing or blocking the data pulses and the sync/stab pulses in accordance with a gate signal, pulse height analyzer means connected to the gate means for providing signals corresponding to the characteristics of the earth's formation in accordance with the passed data pulses and the passed sync/stab pulses from the gate means, and means connected to the conducting means and to the gate means for providing the gate signal to the gate means when a valid sync pulse has been provided by the conducting means so as to pass data pulses and sync/stab pulses.

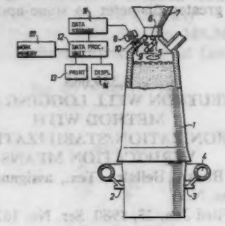
4,339,664
METHOD AND APPARATUS FOR REGISTRATION OF TOPOGRAPHY

Rudolf Wiklund, Täby, and Lennart Nordström, Lidingö, both of Sweden, assignors to Pharos AB, Lidingö, Sweden

Filed Apr. 18, 1980, Ser. No. 141,733
Claims priority, application Sweden, Apr. 18, 1979, 7903368
Int. Cl.³ G01N *21/85*
U.S. Cl. 250—577 **11 Claims**

1. Apparatus for determining the topography of a blast furnace charge mass comprising:
distance measuring means for measuring the distance of a plurality of surface points on said means from a point exterior to said blast furnace of the phase comparison type, said measuring means including means for projecting a narrow wave information light beam to said surface points from said exterior point, and for detecting reflections from restricted areas containing said points indicative of said distance;
computer means connected to receive a signal from said

means for projecting indicating angular coordinates of said beam, and for receiving signal components from said means for detecting said reflections, said computer providing distance of said points from said beam origination point; and



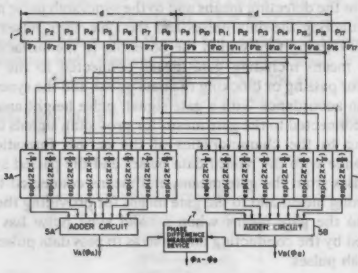
means for displaying each of said distances with respect to reference coordinates of said blast furnace, whereby a simulation of said mass is produced.

4,339,665

APPARATUS FOR DETECTING DISPLACEMENT OF OPTICAL IMAGE

Ken Utagawa, Yokohama, and Hiroshi Shirasu, Kawasaki, both of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 21, 1980, Ser. No. 123,211
Claims priority, application Japan, Mar. 9, 1979, 54-26757
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **3 Claims**



1. Apparatus for detecting displacement of an optical image formed through an image forming optical system, said apparatus comprising:

(1) a photosensitive element array comprising a number of photosensitive elements disposed to receive light passed through said image forming optical system;

(2) a first circuit for multiplying the electric outputs from photosensitive elements in said array by vectors whose phases increase sequentially in the order of the arranged elements and adding the products together to form an output;

(3) a second circuit for multiplying the electric outputs from photosensitive elements in the same array but shifted from those elements processed by said first circuit by the same vectors as in the first circuit sequentially in the order of the arranged elements and adding the products together to form an output; and

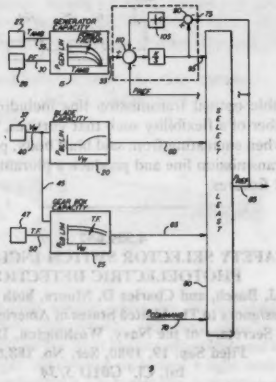
(4) a phase difference measuring circuit for measuring the difference in phase between said outputs from the first and second circuits.

4,339,666

BLADE PITCH ANGLE CONTROL FOR A WIND TURBINE GENERATOR

John P. Patrick, South Windsor, Conn.; Joseph M. Kos, Holyoke, Mass., and Kermit I. Harner, Windsor, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 24, 1980, Ser. No. 219,611
Int. Cl.³ F03D *9/00*
U.S. Cl. 290—44 **7 Claims**



1. A blade pitch angle control for a wind turbine-generator having power components including a variable pitch blade rotor driving an electric generator through a gear set, said control comprising means for providing a wind velocity signal indicative of average present wind velocity, and signal processing means responsive to said wind velocity signal for providing a power reference signal indicative of the desired blade pitch angle for said wind turbine generator to withstand wind at the velocity indicated by said wind velocity signal, characterized by:

means providing a turbulence factor signal indicative of the degree to which the present instantaneous wind velocity may exceed the present average wind velocity; and

said signal processing means being responsive to said turbulence factor signal for providing a gear set capacity signal as a function of said wind velocity signal and said turbulence factor signal indicative of the desired blade pitch angle for said rotor to safely drive said gear set in response to maximum likely wind velocities indicated by said wind velocity signal and said turbulence factor signal, said signal processing means being further responsive to said wind velocity signal for providing a blade capacity signal as a function of said wind velocity signal indicative of the desired blade pitch angle for said rotor to safely accommodate said wind velocities indicated by said wind velocity and said turbulence factor signal, said signal processing means providing said power reference signal indicative of desired blade pitch angle as a function of a selected one of said blade capacity signal and said gear set capacity signal to provide a power reference signal indicative of the largest allowable blade pitch angle for safe operation of said rotor and gear box.

4,339,667
AUTOMOTIVE VEHICLE SWITCHING ELECTRIC CIRCUIT

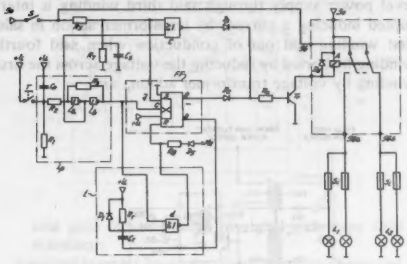
Eduard Bergmann, Ludenscheid, and Volker Speidel, Schalksmuhle, both of Fed. Rep. of Germany, assignors to Firma Leopold Kostal, Fed. Rep. of Germany

Continuation of Ser. No. 64,546, Aug. 8, 1979, abandoned. This application Apr. 13, 1981, Ser. No. 253,718

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1979, 2908131

Int. Cl.³ B60Q *1/14*

U.S. Cl. 307—10 LS **16 Claims**



1. Means for actuating and controlling a light-passing signal of an automotive vehicle and for interrelated and timed switching between high-beam and low-beam lights of the automotive vehicle road-lighting system, the said means comprising a DC-voltage-fed electric circuit interconnecting in interruptible manner the said light-passing signal and the vehicle road-lighting system, said electric circuit including a manual switch, a time responsive circuit and a closable relay contact for a. actuating the light passing signal and for b. changing the road-lighting system from high-beam to low-beam, wherein the choice of a. or b. is determined by the time responsive circuit and the length of time the manual switch is held closed.

4,339,668
MONOLITHICALLY INTEGRATED CIRCUIT OF HIGH DIELECTRIC STRENGTH FOR ELECTRICALLY COUPLING ISOLATED CIRCUITS

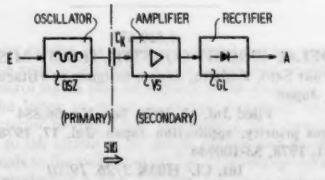
Ruediger Mueller, Munich; Michael Pomper, Schliersee, and Ludwig Leipold, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 14, 1979, Ser. No. 75,679

Claims priority, application Fed. Rep. of Germany, Sep. 28, 1978, 2842319

Int. Cl.³ H01L *27/12*

U.S. Cl. 307—149 **11 Claims**



1. A monolithically integrated circuit of high dielectric strength for electrically coupling isolated circuits having a high voltage difference therebetween, comprising: a signal coupler integrated on a chip; a primary circuit on the chip creating a signal; a secondary circuit on the chip to be coupled to receive the signal of the primary circuit, a high voltage difference being present between the primary and secondary circuits; the signal coupler having an integrated coupling capacitor formed of a coplanar arrangement of more than two spaced conductor paths embedded into a passivation layer, the passivation layer being arranged on an insulating substrate, and the signal coupler having a high dielectric strength of several kV; and

the coupling capacitor comprising a plurality of coupling sub-capacitors formed of coplanar conductor path arrangements positioned on the chip, the coupling sub-capacitors being commonly interconnected in a series arrangement to form a capacitive voltage divider, and spacings between the conductor paths being reduced in comparison to spacings between conductor paths in the case of a coupling capacitor of a single coplanar conductor path arrangement.

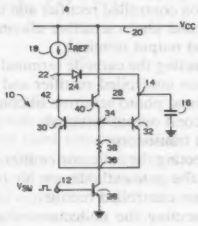
4,339,669
CURRENT RAMPING CONTROLLER CIRCUIT

Robert B. Jarrett, Tempe, and James J. LoCascio, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 8, 1980, Ser. No. 166,866

Int. Cl.³ H03K *5/08*

U.S. Cl. 307—228 **9 Claims**



1. A current ramping controller circuit which is responsive to a control signal supplied to an input thereof for alternately sourcing and sinking current at an output thereof the values of which are substantially the same, comprising:

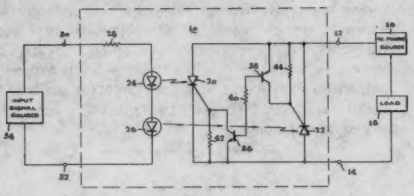
reference current source means for producing a reference current, said reference current being unilaterally sourced to the output when said control signal is in a first level state; and

circuit means responsive to said control signal being in a second level state for sinking current at the output terminal having a value substantially equal to said sourcing current, said circuit means including a first matched pair of transistors each having first and second electrodes and a control electrode respectively, said control electrodes being interconnected at a first node, said first electrodes being interconnected at a second node, said second electrode of a first one of said matched pair of transistors being coupled to said reference current source means, the second electrode of the second one of said matched transistors being coupled to the output of the ramping controller circuit, and current cancellation means coupled between the second and control electrodes of said first one of said matched transistors for providing current drive to said first and second matched transistors such that current error is reduced in said circuit means whereby the sourcing current and the sinking current are substantially equal to one another, said current cancellation means being a transistor having first, second and control electrodes, said first electrode being coupled to the first node of said circuit means, said second electrode being coupled to a second terminal at which is supplied a source of operating potential, said control electrode being coupled to said second electrode of said first one of said matched transistors.

4,339,670
ZERO VOLTAGE SWITCHING AC RELAY CIRCUIT

Ciro Guajardo, Harbor City, Calif., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

Filed Jun. 30, 1980, Ser. No. 164,224
Int. Cl.[3] H03K 17/72
U.S. Cl. 307—252 A 4 Claims



1. An alternating current relay circuit comprising, in combination:

first and second output terminals;

first and second photo sensitive silicon controlled rectifiers;

means for connecting the anode terminal of the first photo sensitive silicon controlled rectifier and the cathode terminal of the second photo sensitive silicon controlled rectifier to the first output terminal;

means for connecting the cathode terminal of the first photo sensitive silicon controlled rectifier and the anode terminal of the second photo sensitive silicon controlled rectifier to the second output terminal;

first and second transistors;

means for connecting the collector-emitter circuit of the first transistor to the gate-cathode circuit of the first photo sensitive silicon controlled rectifier;

means for connecting the collector-emitter circuit of the second transistor to the gate-cathode circuit of the second photo sensitive silicon controlled rectifier;

means for connecting a current limiting element between the base terminal of the first transistor and the base terminal of the second transistor, whereby the current limiting element is in series with the emitter-base junction of the first transistor to provide the sole current path for the flow of base bias current from the second output terminal to the base terminal of the second transistor, and whereby the current limiting element is in series with the emitter-base junction of the second transistor to provide the sole current path for the flow of base bias current from the first output terminal to the base terminal of the first transistor, so that the flow of base bias current to the first and second transistors requires the breakdown of the emitter-base junction of the second and first transistors, respectively;

a light source having a light output and positioned so that the light output impinges on the first and the second photo sensitive silicon controlled rectifiers to trigger them into conduction; and

means for connecting the light source to the first and second input terminals.

4,339,671
PROPORTIONAL BASE DRIVE CIRCUIT

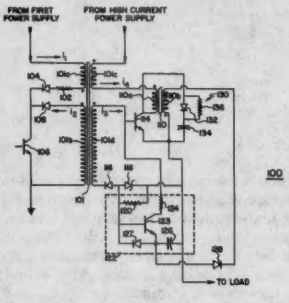
John N. Park, Rexford, and Robert L. Steigerwald, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 21, 1980, Ser. No. 133,489
Int. Cl.[3] H03K 17/60
U.S. Cl. 307—253 7 Claims

1. A proportional base drive circuit supplied by a signal level power supply to effect rapid and efficient switching of current through a load transistor supplied from a power source and coupled to a load comprising:

a main transformer having four mutually coupled windings, the load transistor having its base to emitter junction coupled across the first winding and the collector to emitter portion of the load transistor in series with the second winding, the power source and the load forming a loop, said second winding providing base current in the load transistor proportional to the load current by current transformer action between the first and second winding; the third winding connected in series with the signal level power supply;

means for alternately interrupting current flow supplied by said signal level power supply through the third winding of said transformer and shorting the fourth winding of said transformer, to cause said load transistor to be biased into conduction when said current flow supplied by said signal level power supply through said third winding is interrupted inducing a current by transformer action in said first winding and out of conduction when said fourth winding is shorted by reducing the voltage across the first winding by voltage transformer action,; and



means for both driving reverse base current through the load transistor and maintaining a negative base-emitter voltage across said load transistor after turn off, when said fourth winding is shorted resulting in the voltage across the first winding being reduced including an energy storage means, a second transistor and means for biasing said second transistor into conduction when the voltage across said first winding is reduced, said second transistor connected in series with said energy device, the series combination connected across the base emitter portion of said load transistor, said energy storage means connected to said second winding to receive energy when said load transistor is conducting and said second transistor being biased into conduction when said fourth winding is shorted resulting in the voltage across said first winding being reduced, allowing stored energy in said energy storage device to force reverse base current through the load transistor to remove charge turning said load transistor off and said energy storage means providing a negative voltage.

4,339,672
DELAY CIRCUIT CONSTITUTED BY MISFETS

Katsuyuki Sato, Kodaira, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 12, 1979, Ser. No. 56,854
Claims priority, application Japan, Jul. 17, 1978, 53-86098; Aug. 21, 1978, 53-100944
Int. Cl.[3] H03K 3/26, 19/01
U.S. Cl. 307—270 2 Claims

1. A driving circuit, for driving a push-pull inverter having first and second insulated gate type field effect transistors connected in series between first and second power supply terminals, said driving circuit comprising:

a first delay circuit including:

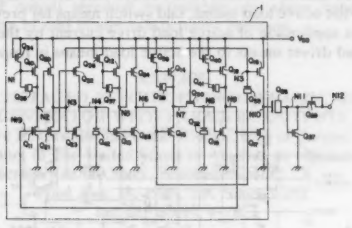
a third insulated gate type field effect transistor having a drain connected to said first power supply terminal, a

source connected to an output node and a gate connected to an input node;

a fourth insulated gate type field effect transistor having a drain connected to said output node, a source connected to said second power supply terminal and a gate;

a capacitance element connected between said output node and said second power supply terminal; and

a first inverter having an input terminal connected to said input node and an output terminal connected to said gate of said first insulated gate type field effect transistor and to



said gate of said fourth insulated gate type field effect transistor;

a second inverter having an input terminal connected to said output node; and

a bootstrap capacitor having first and second terminals, wherein said first terminal is connected to a gate of said first insulated gate type field effect transistor, and said second terminal is connected to an output terminal of said second inverter, and said gate of said second insulated gate type field effect transistor is connected to said input node.

4,339,673

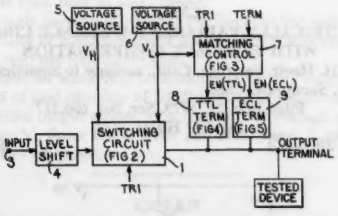
DRIVER CIRCUITS FOR AUTOMATIC DIGITAL TESTING APPARATUS

Graham A. Perry, Stockport, England, assignor to International Computers Limited, London, England

Filed Mar. 12, 1980, Ser. No. 129,637

Int. Cl.³ H03K *3/01*; G01R *00/00*

U.S. Cl. 307—270 **8 Claims**



1. A driver circuit for automatic digital testing apparatus, comprising a switching circuit; a first signal input terminal by which a control signal may be applied to the switching circuit to cause the latter to adopt a related switching state, the switching circuit having a line terminating at a terminal for connection to the circuit to be tested; second and third signal input terminals to the switching circuit, first voltage producing means for producing a first variable reference voltage connected with the second input; second voltage producing means for producing a second variable reference voltage connected with the third input; first and second circuit to be tested matching circuits having different operational characteristics, a matching circuit control unit connected to control operation of the first and second matching circuits, said control unit being responsive to one of the reference voltages for connecting one or the other of the matching circuits to the output terminal in accordance with the magnitude of that reference voltage, said switching circuit being such as to produce at the output terminal a binary output signal having two levels representing the binary digits 0 and 1, the levels being determined respectively by the two reference voltage levels.

4,339,674

TRIGGER CIRCUIT

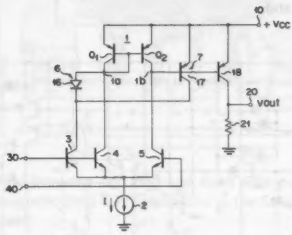
Masaru Hashimoto, Ayase, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 12, 1980, Ser. No. 186,769

Claims priority, application Japan, Sep. 19, 1979, 54-119235

Int. Cl.³ H03K *5/153*

U.S. Cl. 307—362 **4 Claims**



1. A trigger circuit comprising:

first, second and third transistors of the same conductivity type each having a base, emitter and collector, said bases of said first and second transistors being connected in common, said emitters of said first, second and third transistors being connected in common, and said common-connected bases of said first and second transistors and said base of said third transistor being connected respectively to first and second input terminals between which a trigger signal is applied;

a current source connected to said common-connected emitters of said first, second and third transistors;

a current mirror having an input terminal and an output terminal connected respectively to said collectors of said second and third transistors;

switching means connected between said input terminal of said current mirror and said collector of said first transistor; and

means connected to said output terminal of said current mirror and said switching means for switching on and off said switching means in response to an output current of said current mirror and a collector current of said third transistor.

4,339,675

LOGIC CIRCUIT HAVING AN IMPROVED DISABLE CIRCUIT

Richard A. Ramsey, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1979, Ser. No. 66,208

Int. Cl.³ H03K *19/003, 19/013, 19/088*

U.S. Cl. 307—473 **2 Claims**

1. In a logic circuit comprising:

input means coupled to an input terminal, said input means for providing phase splitter drive current in response to a predetermined input signal applied to the input terminal;

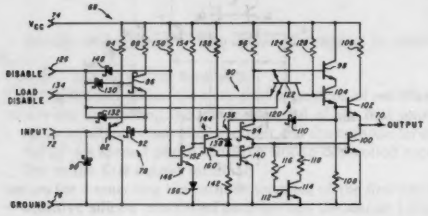
active load means coupled to an output terminal, said active load means for sourcing output current to the output terminal in response to receiving active load drive current;

active load driver means for providing active load drive current in response to receiving output drive current;

active drive means coupled to the output terminal, the active drive means sinking output current from the output terminal in response to receiving output drive current; and

phase splitter means coupled to the active drive means and to the active load driver means, said phase splitter means for applying output drive current to the active drive means in response to receiving phase splitter drive current, and for applying output drive current to the active load driver means in response to receiving no phase splitter drive current;

an improved disable circuit comprising disable means coupled to the input means and to a disable terminal, said disable means for preventing the application of phase splitter drive current by the input means to the phase splitter means in response to a predetermined disable signal applied to the disable terminal, and for allowing the application of phase splitter drive current to the phase splitter means in the absence of said predetermined disable signal; and



switch means coupled to the disable terminal, to the active load driver means and to the active load means, said switch means for preventing the application of active load drive current by the active load driver means to the active load means in response to the predetermined disable signal applied to the disable terminal, and for allowing the application of active load drive current by the active load driver means to the active load means in the absence of said predetermined disable signal, wherein the switch means, comprises active load switch driver means coupled to the disable terminal, said active load switch driver means for providing active load switch drive current in the absence of the predetermined disable signal; and

an active load switch device coupled to the active load switch driver means and interposed between the active load driver means and the active load means, said active load switch device for applying any active load drive current provided by the active load driver means to the active load means in response to receiving active load switch drive current from the active load switch driver means.

4,339,676

LOGIC CIRCUIT HAVING A SELECTABLE OUTPUT MODE

Richard A. Ramsey, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 13, 1979, Ser. No. 66,209
Int. Cl.³ H03K *19/003, 19/013, 19/088*
U.S. Cl. 307—473 **2 Claims**

1. In a logic circuit comprising:

Input means coupled to an input terminal, said input means for providing phase splitter drive current in response to a predetermined input signal applied to the input terminal;

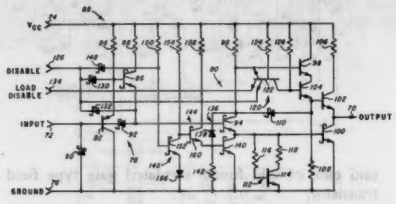
active load means coupled to an output terminal, said active load means for sourcing output current to the output terminal in response to receiving active load drive current;

active load driver means for providing active load drive current in response to receiving output drive current;

active drive means coupled to the output terminal, said active drive means for sinking output current from the output terminal in response to receiving output drive current; and

phase splitter means coupled to the active drive means and to the active load driver means, said phase splitter means for applying output drive current to the active drive means in response to receiving phase splitter drive current, and applying output drive current to the active load driver means in response to receiving no phase splitter drive current;

a load disable circuit comprising; switch means coupled to a load disable terminal, to the active load driver means and to the active load means, said switch means for preventing the application of active load drive current by the active load driver means to the active load means in response to



a predetermined load disable signal applied to the load disable terminal, and for allowing the application of active load drive current by the active load driver means to the active load means in the absence of said predetermined load disable signal, wherein said switch means comprises;

active load switch driver means coupled to the load disable terminal, the active load switch driver means providing active load switch drive current in the absence of the predetermined load disable signal; and

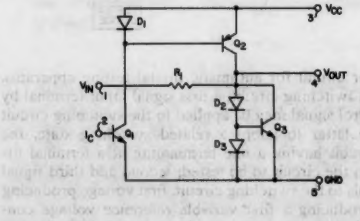
an active load switch device coupled to the active load switch driver means and interposed between the active load driver means and the active load means, the active load switch device applying any active load drive current provided by the active load driver means to the active load means in response to receiving active load switch drive current from the active load switch driver means.

4,339,677

ELECTRICALLY VARIABLE IMPEDANCE CIRCUIT WITH FEEDBACK COMPENSATION

Werner H. Hoeft, Saratoga, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Dec. 21, 1979, Ser. No. 106,217
Int. Cl.³ H03H *7/24*
U.S. Cl. 307—564 **5 Claims**



1. A variable impedance voltage attenuator circuit for providing an electrically variable shunt impedance between an output terminal of a series resistive signal line and a common terminal, which comprises:

at least first and second diodes connected in series with like

polarity between said resistive signal line output terminal and said common terminal to form a shunt impedance therebetween, said first diode being connected to said output terminal;

current source means connected to said output terminal for passing a current through said series-connected diodes to establish a desired quiescent shunt impedance value between said output and common terminals; and

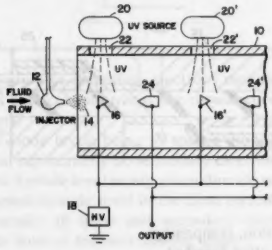
feedback circuit means connected from the junction between said first and second series-connected diodes to said output terminal for maintaining said diode current at a substantially constant level with changes in signal level at said output terminal to maintain the shunt impedance value of said diodes substantially constant.

4,339,678

MULTISTAGED ELECTROHYDRODYNAMIC (EHD) GENERATOR WITH PARALLEL OUTPUTS

Theodore H. Gawain, and Oscar Biblarz, both of Carmel, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 18, 1980, Ser. No. 179,202
Int. Cl.³ H02K *44/00*
U.S. Cl. 310—10 **1 Claim**



1. A multistage electrohydrodynamic (EHD) generator comprising:

(a) a plurality of EHD generator stages connected in series, said plurality of stages being formed in a single straight channel, each of said EHD stages having a means for charging and a means for discharging particles entrained in the fluid flow in said channel;

(b) a single particle injector at the input to the first of said plurality of EHD generator stages for injecting said particles into the fluid flow; and

(c) means for additively collecting the current output from each of said plurality of EHD generator stages such that the total output power, P, is equal to the voltage per each stage, V, times the current per each stage, I, times the number of stages, n.

4,339,679

LOW-INERTIA HIGH-TORQUE SYNCHRONOUS INDUCTION MOTOR

Edward O. Urschel, Long Beach, Calif., assignor to Litton Systems, Inc., Murphy, N.C.

Filed Jan. 16, 1981, Ser. No. 225,584
Int. Cl.³ H02K *37/00*
U.S. Cl. 310—49 R **3 Claims**

1. A low inertia synchronous induction motor for driving a daisy wheel printing element comprising:

a rotor assembly including

an elongated motor shaft,

a first laminated drum-shaped pole piece mounted concentrically on said shaft,

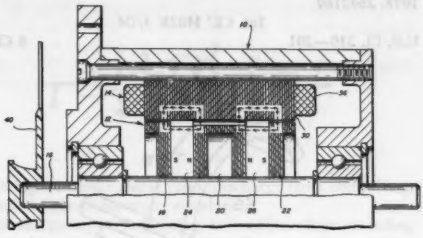
second and third laminated cup-shaped pole pieces concentrically mounted on said shaft at either end of said drum-shaped piece and outwardly facing therefrom,

a common number of axially-oriented, evenly spaced teeth formed on the respective circumferences of each of said pole pieces,

the teeth of said second and third pole pieces axially aligned with each other and staggered with respect to the teeth of said first pole piece,

a first washer-shaped, axially-magnetized, rare earth magnet mounted concentric with said shaft and sandwiched between said first and second pole pieces, and

a second washer-shaped, axially-magnetized, rare earth magnet mounted concentric with said shaft and sandwiched between said first and third pole pieces so that its magnetic field is in opposition to the field of said first magnet,



a stator assembly coaxial with said rotor assembly including a cylindrical stack of selectively configured laminations defining a plurality of internally projecting, toothed stator poles, and

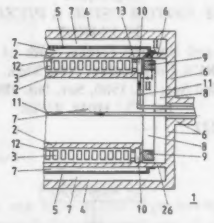
said stator poles having an axial length substantially equal to the sum of the combined axial lengths of said pole pieces and said magnets.

4,339,680

SORPTION PUMP FOR A TURBOGENERATOR ROTOR WITH SUPERCONDUCTIVE EXCITATION WINDING

Pierre Flecher, Alzenau-Mischelbach, Fed. Rep. of Germany, and Hansjörg Köfler, Graz, Austria, assignors to BBC Brown, Boveri & Company, Ltd., Baden, Switzerland

Continuation of Ser. No. 966,568, Dec. 5, 1978, abandoned. This application Nov. 24, 1980, Ser. No. 209,741
Claims priority, application Switzerland, Jan. 24, 1978, 721/78
Int. Cl.³ H02K *9/00*
U.S. Cl. 310—62 **9 Claims**



1. Apparatus for maintaining a thermally insulating vacuum in a turbogenerator rotor having a superconductive excitation winding, said apparatus comprising a sorption pump in the interior of said rotor, said rotor having at least one vacuum chamber, said sorption pump having apertures communicating with said vacuum chamber, said sorption pump having a plurality of separate material chambers containing an adsorbent material and the walls of said material chambers being at least partially formed by screens, whereby said sorption pump ad-

sorbs matter from said vacuum chamber, thereby maintaining the vacuum in the vacuum chamber.

4,339,681

SUPERCONDUCTING FIELD WINDING FOR THE ROTOR OF AN ELECTRIC MACHINE

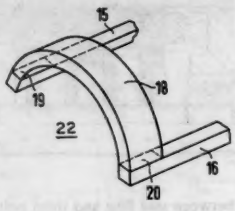
Günther Bogner, Erlangen, and Dieter Kullmann, Langenzenn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Aug. 20, 1976, Ser. No. 716,221

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1975, 2542169

Int. Cl.³ H02K *3/04*

U.S. Cl. 310—201 **4 Claims**



1. A superconducting field winding for the rotor of an electric machine, the electric machine rotor including a plurality of slots into which winding sections may be placed and including a cylindrical end portion having a radius at least approximately equal to the radius of the slot bottom comprising:

a plurality of winding sections made of conductors of a stabilized superconducting material, said conductors having a predetermined permissable bending radius which is greater than the radius at said end portion of said rotor, each winding section forming a pole and including:

lateral parts disposed in the slots in said rotor extending parallel to the longitudinal axis of the rotor;

pre-fabricated, yoke-like conductor elements made of said stabilized superconducting material pre-fabricated having a curvature equal to the radius of said rotor end portion connecting conductors of associated lateral parts of a winding section; and,

contact surfaces between each yoke-like conductor element and the conductors of the lateral parts connected to it, said contact surfaces being larger than the cross sectional area of the conductors of the lateral parts.

4,339,682

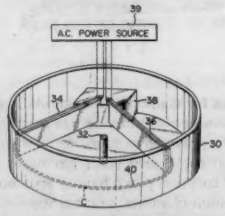
ROTATIVE MOTOR USING A PIEZOELECTRIC ELEMENT

Minoru Toda, and Susumu Osaka, both of Machida, Japan, assignors to RCA Corporation, New York, N.Y.

Filed Sep. 22, 1980, Ser. No. 189,354

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—321 **6 Claims**



1. In combination,

a rotatable member,

first and second piezoelectric elements secured at one end to a support at an optional angle to one another, the opppposite ends of said elements being free to vibrate,

an elastic member connected between said free ends with the central point of said elastic member in frictional contact with the surface of said rotatable member, and

means for exciting said elements to cause by a phase difference of the vibration at the respective free ends of said elements the central point of said elastic member to have a circular physical displacement to rotate said rotatable member in a direction determined by said phase difference.

4,339,683

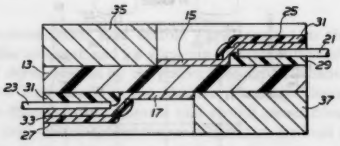
ELECTRICAL CONNECTION

William R. Scott, Doylestown; Philip Bloomfield, Bala Cynwyd, both of Pa.; William T. Weist, Cherry Hill, N.J., and Karen M. McMahon, Southampton, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 4, 1980, Ser. No. 118,043

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—364 **12 Claims**



1. A connection, comprising:

a first conductive member;

a second member consisting of polyvinylidene fluoride;

an epoxy adhesive material disposed between and attaching said first conductive member to said second member; and

a first electrically conductive coating on adjacent portions of said first conductive member and said second member for electrically connecting said first conductive member and said second member.

4,339,684

ELECTRON MULTIPLIER TUBE WITH AXIAL MAGNETIC FIELD

Kei-ichi Kuroda; Daniel Sillou, both of Geneva, Switzerland, and Fujio Takeutchi, Pittsburgh, Pa., assignors to ANVAR, France

Filed Dec. 18, 1979, Ser. No. 104,818

Claims priority, application France, Dec. 22, 1978, 78 36148

Int. Cl.³ H01J *43/18, 43/14*

U.S. Cl. 313—105 R **14 Claims**

1. In an electron multiplier apparatus, comprising

(1) a vacuum enclosure,

(2) a plurality of dynode stages, each capable of secondary electron emission when hit by charged particles, each dynode stage having a distributed structure,

(3) electron-receiving means,

(4) means for producing an electron accelerating electric field generally oriented along a principal axis passing through said plurality of dynode stages, towards said electron-receiving means,

(5) means for producing a magnetic field generally oriented along said principal axis,

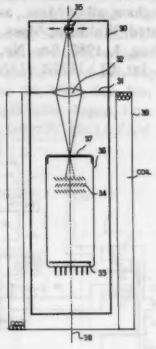
the improvement comprising,

(a) said dynode stages each comprising at least two levels of distributed dynode elements,

(b) said dynode levels being spaced apart along said princi-

pal axis, the dynode elements of each dynode level being shifted between themselves within each dynode stage to thereby define a substantially impervious wall against substantially rectilineal motions of electrons moving parallel to said principal axis,

(c) the dynode elements in each level having a dimension transverse to said principal axis being selected in relationship with the magnetic field such that the average radius



of curvature of secondary electrons emitted therefrom is at least equal to said transverse dimension of the dynode elements,

(d) the dynode levels being so spaced along said principal axis that substantially no secondary electron emitted from the first dynode level in any given dynode stage will strike the second dynode level in the same dynode stage, while substantially all these said secondary electrons strike a dynode level of the next dynode stage.

4,339,685

SEALED BEAM LAMP ASSEMBLY

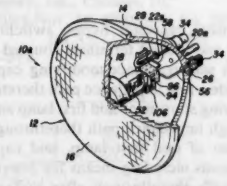
Norio Saguchi; Hideki Ishii; Yoshiaki Sakakibara; Masakazu Nagasawa; Osami Saitoh; Yukio Wakimizu, and Susumu Kanematsu, all of Shimizu, Japan, assignors to Koito Manufacturing Company, Ltd., Tokyo, Japan

Filed May 9, 1980, Ser. No. 148,180

Claims priority, application Japan, May 14, 1979, 54-63946[U]; Dec. 29, 1979, 54-178457[U]; Dec. 29, 1979, 54-182823[U]; Mar. 19, 1980, 55-34913

Int. Cl.³ H01K *1/28, 1/44*

U.S. Cl. 313—113 **6 Claims**



1. An electric lamp assembly comprising a reflector, a support rod firmly anchored at one end to the reflector and preformed into the shape of a U to include a shank extending forwardly from the reflector and a fold directed rearwardly from the front end of the shank in parallel spaced relation thereto, and, a lamp disposed on that side of the shank which is opposite to the side where the fold lies, the lamp being secured to the fold of the support rod and thereby mounted on the reflector, whereby, the position of the lamp relative to the reflector is preadjusted by turning the fold of the support rod about its shank.

4,339,686

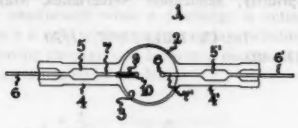
METAL VAPOR LAMP HAVING INTERNAL COATING FOR EXTENDING CONDENSATE FILM

Ralph M. Potter, Pepper Pike, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 26, 1979, Ser. No. 107,253

Int. Cl.³ H01J *17/16, 61/30*

U.S. Cl. 313—221 **12 Claims**



6. A high intensity metal vapor discharge lamp comprising:

a sealed light-transmitting envelope,

a discharge-supporting filling in said envelope including metal salt substantially in excess of the quantity vaporized in operation of said lamp the excess of said metal salt being liquid at the temperature of the walls of said envelope during operation,

electrode means for supporting a discharge within said envelope,

and a coating within said envelope comprising refractory metal oxide, oxynitride or nitride fibers attached to the envelope walls and forming a relatively open structure.

4,339,687

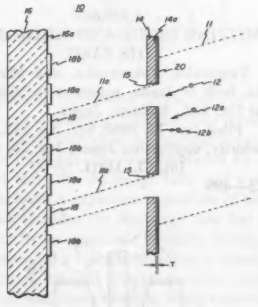
SHADOW MASK HAVING A LAYER OF HIGH ATOMIC NUMBER MATERIAL ON GUN SIDE

Rowland W. Redington, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 29, 1980, Ser. No. 154,221

Int. Cl.³ H01J *29/07*

U.S. Cl. 313—402 **1 Claim**



1. In a cathode ray tube of the type having at least one electron beam directed through apertures of a shadow mask for impingement upon at least one phosphor element, deposited upon the rear surface of the faceplate, and associated with each shadow mask aperture, the improvement comprising:

a layer of a material, having an atomic number greater than 28 selected from a group consisting of tungsten of a thickness of about 3,000 angstroms and gold of a thickness of about 1,500 angstroms, fabricated upon substantially all of the non-apertured surface of said shadow mask upon which said at least one electron beam impinges; said material being characterized by a backscattering ratio greater

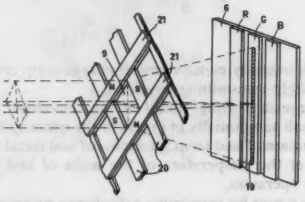
than the backscattering ratio of the material from which said mask is fabricated, and causing a greater percentage of beam electrons impingent upon said mask to backscatter, relative to the percentage of electrons backscattered from said mask without said layer.

4,339,688

CATHODE-RAY TUBE HAVING A MAGNETIC QUADRUPOLE SHADOW MASK

Jan Verweel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 31, 1980, Ser. No. 135,801
Claims priority, application Netherlands, May 3, 1979, 7903467
Int. Cl.[3] H01J *29/07, 31/20*
U.S. Cl. 313—403 3 Claims



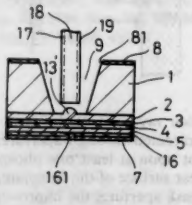
1. A cathode ray tube for displaying coloured pictures comprising in an evacuated envelope means to generate a number of electron beams, a display screen comprising a large number of areas luminescing in different colours, and colour selection means comprising a large number of apertures, in which apertures a magnetic quadrupole lens is formed and which apertures assign each electron beam to luminescent areas of one colour, characterized in that the colour selection means are formed by an apertured plate of soft-magnetic material, which plate is provided on one side with a first grid of parallel strips of hard magnetic material provided between the rows of apertures, and which colour selection means are magnetized in a direction perpendicular to the plane of the plate.

4,339,689

LIGHT EMITTING DIODE AND METHOD OF MAKING THE SAME

Haruyoshi Yamanaka, Takarazuka, and Masaru Kazumura, Takatsuki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 21, 1980, Ser. No. 115,249
Claims priority, application Japan, Jan. 29, 1979, 54-9519
Int. Cl.[3] H01L *33/00*
U.S. Cl. 313—499 14 Claims



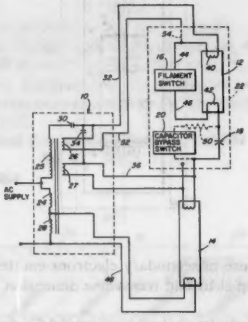
1. A light emitting diode having an improved surface for coupling with a light guide, comprising:
a semiconductor active layer,
a semiconductor first clad layer formed on a surface of said semiconductor active layer;
a protrustion formed unitarily on a surface of said first clad layer for facing an input end of said light guide to effect light coupling therewith, and wherein
a depth X measured from the surface of said clad layer to a light emitting region of said clad layer and a radius R of said protrusion have a relationship of $0<X/R\leqq 0.6$.

4,339,690

ENERGY SAVING FLUORESCENT LIGHTING SYSTEM

Robert J. Regan, Needham; Adrian Cogan, Waltham, and Carl F. Buhrer, Framingham, all of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Aug. 1, 1980, Ser. No. 174,472
Int. Cl.[3] H05B *41/14*
U.S. Cl. 315—97 7 Claims



1. In a rapid-start fluorescent lamp lighting system of the type including first and second fluorescent lamps, each having first and second filaments sealed therein at opposite ends, and a sealed ballast unit including a high voltage output, a first low voltage output, and further including second and third low voltage outputs coupled to said filaments, respectively, of said second fluorescent lamp, energy-saving circuitry comprising:
a reactance-modifying capacitor coupled in a series circuit with said first and second fluorescent lamps across said high voltage output of said ballast unit, said first fluorescent lamp having one lead of said first filament and one lead of said second filament coupled in said series circuit;
filament switching means, including a first terminal coupled to the other lead of said first filament of said first lamp and a second terminal coupled to the other lead of said second filament of said first lamp, operative to provide a low impedance path therethrough during starting of said first lamp and operative to provide a high impedance path therethrough during normal operation of said first lamp; and
voltage responsive capacitor bypass switching means, including first and second terminals coupled electrically in parallel with said reactance-modifying capacitor, operative to provide a low impedance path therethrough part of ac cycles during starting of said first lamp and operative to provide a high impedance path therethrough during normal operation of said first lamp, said capacitor bypass switching means including means for providing said low impedance path therethrough after voltage across said terminals of said capacitor bypass switching means, exceeds a predetermined voltage, said predetermined voltage being greater than the voltage across said reactance-modifying capacitor during normal operation of said first fluorescent lamp and being less than the voltage across said reactance-modifying capacitor during starting of said first fluorescent lamp.
whereby said filament switching means is operative to conduct filament heating current during lamp starting, whereby said capacitor bypass switching means is opera-

tive to bypass said reactance-modifying capacitor during part of ac cycles during lamp starting facilitating starting, and whereby said reactance-modifying capacitor increases the series capacitive reactance of said lighting system during normal operation, thereby reducing the energy consumption of said system.

4,339,691

DISCHARGE APPARATUS HAVING HOLLOW CATHODE

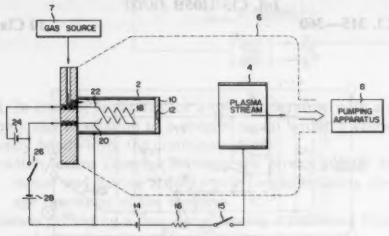
Osami Morimiya, Tokyo; Setsuo Suzuki, and Shigeki Monma, both of Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Oct. 20, 1980, Ser. No. 199,057

Claims priority, application Japan, Oct. 23, 1979, 54-136626

Int. Cl.³ H01J *7/24*

U.S. Cl. 315—111.21 **19 Claims**



1. A discharge apparatus comprising:
a vacuum envelope;
an anode and a hollow cathode disposed within said vacuum envelope;
means for supplying an arc power to maintain an arc discharge between said anode and hollow cathode;
a means for evacuating said envelope;
a means for supplying gas under a low pressure through said hollow cathode into said envelope;
a means for restricting the flow of the low pressure gas supplied from said hollow cathode into said envelope such as to maintain the gas pressure within said hollow cathode to be higher than that within said envelope; and
a means for causing discharge within said hollow cathode.

4,339,692

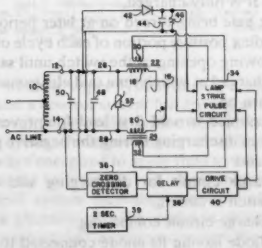
POWER SUPPLY FOR HID LAMP

Robert R. Lasecki, Eastlake; Howard C. Reeve, III, Parma, and Nicholas O. Lindan, Cleveland, all of Ohio, assignors to The Nuarc Company, Inc., Chicago, Ill.

Filed Nov. 18, 1980, Ser. No. 207,953

Int. Cl.³ H05B *41/231*

U.S. Cl. 315—277 **11 Claims**



1. A circuit for supplying power to a high intensity discharge lamp from an alternating current source, comprising a power supply transformer energized from an AC source and having an output winding, a cold cathode high intensity discharge lamp, a pair of lamp strike pulse transformers each having a primary and secondary winding, means connecting said HID lamp and said secondary windings of said pulse transformers in series directly across said transformer output winding, means for supplying lamp strike current pulses to said primary windings, the turns ratio between said primary and secondary windings of said pulse transformers being such that lamp strike pulses are produced across said secondary windings which are of sufficient magnitude to initiate a discharge in said lamp when said lamp is hot, said secondary windings remaining unsaturated when a discharge is initiated in said lamp when it is cold so that said secondary windings limit the current flowing through said lamp to a maximum permissible value during warm up of the lamp.

4,339,693

ARRANGEMENT INCLUDING A GAS AND/OR VAPOR DISCHARGE LAMP

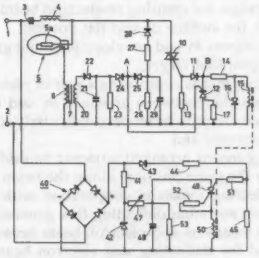
Adrianus M. J. De Bijl, and Johannes A. De Vogel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 17, 1980, Ser. No. 207,320

Claims priority, application Netherlands, Dec. 19, 1979, 7909127

Int. Cl.³ H05B *41/16*

U.S. Cl. 315—225 **8 Claims**



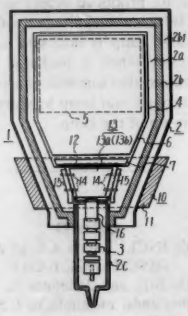
1. An arrangement comprising a gas and/or vapour discharge lamp having a discharge tube, and two terminals which are intended for connection to an a.c. voltage source, in which arrangement the terminals are interconnected by a series arrangement of at least the discharge tube and a stabilization ballast which includes a capacitor, a portion of the series arrangement which includes the discharge tube but not the capacitor is shunted by an electronic auxiliary device, this auxiliary device comprising a branch including a controlled semiconductor switching element provided with a control circuit, the semiconductor switching element being rendered conductive in the operating condition of the lamp in substantially each half cycle of the supply by means of its control circuit, the control of the semiconductor switching element being different during starting of the lamp from that during the operating condition of the lamp, characterized in that the discharge tube is of a type which has an average temperature of at least 200° C. in the operating condition of the lamp, and the control circuit of the semiconductor switching element includes a sensor element coupled to the said series arrangement which reduces the conduction period of the semiconductor switching element per unit of time so long as, in the switched-on condition of the arrangement, the condition of the lamp differs from its operating condition.

4,339,694

FLAT CATHODE RAY TUBE

Akio Ohkoshi, Tokyo; Hiroki Sato, Chiba; Masato Hatanaka, Saitama; Toshio Ohboshi, and Sakae Tanaka, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 11, 1981, Ser. No. 233,388
Claims priority, application Japan, Feb. 15, 1980, 55-18068
Int. Cl.³ H01J *29/70, 29/72*
U.S. Cl. 315—366 **24 Claims**



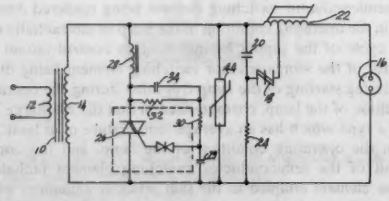
1. A cathode ray tube, comprising:
an evacuated envelope having at least one transparent flat portion;
a fluorescent target arranged on the inner surface of said flat portion;
an electron gun within said envelope in laterally spaced relation to said target for emitting an electron beam along a path parallel with the surface of said flat portion;
first deflecting means in said envelope for impinging said electron beam upon said target;
second deflecting means comprising a pair of plates to put said electron beam therebetween arranged in said envelope for deflecting said electron beam perpendicularly to said surface of said flat portion; and
third deflecting means arranged adjacent to said envelope at substantially the same position, along the beam path, as said second, deflecting means in cooperation with said pair of plates for concentrating deflecting flux generated by means of said third means on said electron beam between said pair of plates and for deflecting said electron beam in parallel with said surface of said flat portion, thereby to produce an image on said target.

4,339,695

HIGH PRESSURE SODIUM LAMP BALLAST CIRCUIT

John V. Siglock, Sierra Madre, Calif., assignor to Unicorn Electrical Products, Anaheim, Calif.

Filed Jun. 5, 1980, Ser. No. 156,766
Int. Cl.³ H05B *41/16*
U.S. Cl. 315—276 **8 Claims**



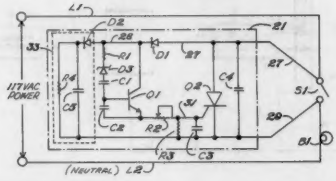
1. A ballast circuit for driving a gas discharge lamp from a constant current alternating voltage source, comprising: a ballast transformer having a magnetic core and windings on the core for coupling the lamp to the voltage source, and a voltage limiting circuit including a switching element having a control electrode, the switching element being connected in a shunt current path across one of the transformer windings, and a band-pass filter network coupling the control electrode across the transformer winding, the band-pass filter network limiting the triggering of the switching device to intermediate frequencies present within the pass-band of the network.

4,339,696

LIGHT SWITCH DELAY CIRCUIT

Tony Jabor, 9001 Galena, El Paso, Tex. 79904

Filed Jun. 16, 1980, Ser. No. 160,095
Int. Cl.³ H05B *39/00*
U.S. Cl. 315—360 **10 Claims**

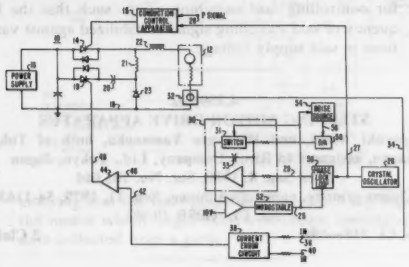


1. A delay circuit adapted to be connected across a light switch for maintaining an electric light bulb on for a given time after the switch has been opened, and wherein the switch has two terminals connected to two leads respectively to which A.C. voltage is applied, with the bulb being connected to one of said leads, said delay circuit comprising:
a first lead adapted to be connected to one terminal of the switch,
a second lead adapted to be connected to the other terminal of the switch,
a switching element having an anode, a cathode, and a gate with its anode and cathode connected to said first and second leads respectively for turning the bulb on when said switching element is on and the switch is open,
a capacitor having one terminal coupled to said first lead,
an electronic gate coupled to the other terminal of said capacitor and having its output coupled to the gate of said switching element for turning said switching element on when said electronic gate is turned on as said capacitor charges when the switch is opened,
said capacitor being charged during each positive portion of each cycle of the A.C. voltage following opening of the switch until it is fully charged,
said electronic gate being turned on at later periods during each succeeding positive portion of each cycle of the A.C. voltage following opening of the switch until said capacitor is fully charged at which time said electronic gate will no longer turn on,
diode means coupled to said first lead for preventing said capacitor from discharging during the negative portion of each cycle, and
a quick discharge circuit for discharging said capacitor when the switch is closed,
said quick discharge circuit comprising:
a blocking diode having its anode connected to said first lead between said diode means and said capacitor, and
a resistor and capacitor connected in parallel to the cathode of said blocking diode and to said second lead.

4,339,697
PROPULSION MOTOR CONTROL APPARATUS AND METHOD

James H. Franz, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 13, 1980, Ser. No. 149,358
Int. Cl.[3] H02P 5/16
U.S. Cl. 318—341 10 Claims



1. In control apparatus for a motor operative with a power supply and in relation to a control signal within a known frequency bandwidth, the combination of:

switch means coupled between the power supply and the motor and having a duty cycle for determining the average operation of the motor;

means providing a first signal having a reference frequency and a predetermined magnitude;

means providing a motor operation error signal having a magnitude in response to at least one of the actual operation of the motor and a desired operation for said motor;

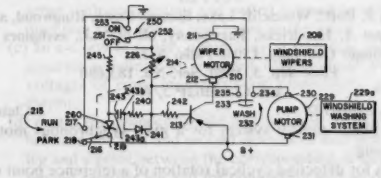
means coupled with the switch means for determining said duty cycle and the average operation of said motor in accordance with a comparison of the magnitude of said first signal and the magnitude of said error signal; and

means coupled with the first signal providing means for providing a predetermined deviation of said reference frequency.

4,339,698
CONTROL APPARATUS FOR WINDSHIELD WIPER SYSTEM

Robert W. Kearns, 9725 Lookout Pl., Gaithersburg, Md. 20760

Filed Apr. 12, 1979, Ser. No. 29,338
Int. Cl.[3] H02P 1/04
U.S. Cl. 318—444 16 Claims

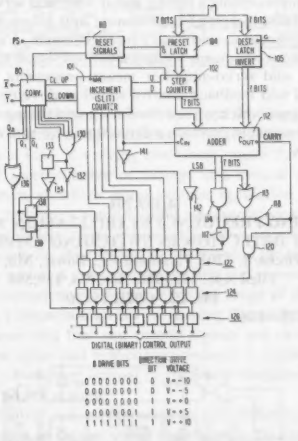


1. In a window wiper system having a wiper for wiping a window and a control system for driving said wiper intermittently through wipe cycles with dwell periods at the ends of said wipe cycles, the improvement comprising a pump motor adapted when energized to apply fluid to said window, washer control means to energize said pump motor when actuated, said control system including means to drive said wiper through a plurality of wipe cycles without a dwell period between wipe cycles in response to actuation of said washer control means, said control system including a capacitance and a resistor connected to said capacitance during said dwell period to change the charge on said capacitance during said dwell period and first circuit means responsive to the potential on one side of said capacitance to initiate a wipe cycle at the end of each dwell period and to initiate dwell periods at the end of wipe cycles, and second circuit means responsive to actuation of said washer control means to change the charge on said capacitance so that said first circuit means will not initiate a dwell period at the end of at least the first wipe cycle following actuation of said washer control.

4,339,699
MOTOR CONTROL SYSTEM FOR USE IN AN APPARATUS FOR PERFORMING TESTS AND MEASUREMENTS ON LIQUID SAMPLES

Jan H. de Jonge, Dieren, and Johannes H. L. Hogen Esch, Aalten, both of Netherlands, assignors to Vitatron Scientific B.V., Dieren, Netherlands

Filed Aug. 19, 1980, Ser. No. 179,502
Int. Cl.[3] G05B 13/00
U.S. Cl. 318—561 4 Claims



1. A motor control system for controlling movement of a motor which drives an element toward a destination position, comprising:

a periodic means for generating a first periodic plural bit signal, each cycle of said plural bit signal corresponding to movement by said element of a first increment of distance, and for generating an increment signal each said cycle;

counting means connected to receive said increment signal, for generating a second periodic plural bit signal, each cycle of said second signal corresponding to movement by said element of a second increment of distance,

means for generating a third plural bit drive signal, including combining means for combining said first and second plural bit signals,

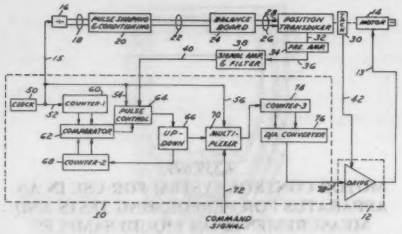
means for enabling said combining means onl when said element is within a given range from said destination, said range being a predetermined function of said second increment of distance, and

means for driving said motor with said third plural bit drive signal.

4,339,700
HIGH FREQUENCY CONTROL SYSTEM USING DIGITAL TECHNIQUES

Richard L. Desbiens, Claremont, N.H., and Richard H. Gile, North Clarendon, Vt., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Feb. 23, 1981, Ser. No. 236,483
Int. Cl.³ G05B *1/06*
U.S. Cl. 318—660 **5 Claims**

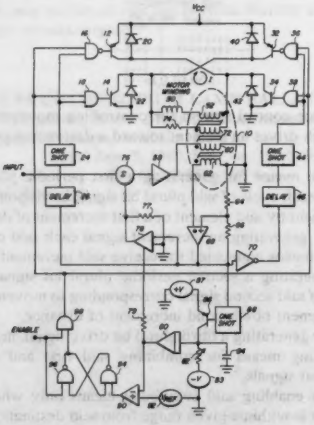


1. An apparatus for controlling the rotary shaft position of a high speed position control system having a servo-amplifier means and drive amplifier means, a servo-motor with a tachometer feedback means and rotary position feedback means, the improvement comprising a high frequency phasing network means receiving a timing signal from said servo-amplifier means, a pulse shaping, conditioning and balancing network means connected to said rotary position means, a conditioning feedback network means feeding a control signal to said servo-amplifier, said servo-amplifier means processing said timing signal and said feedback control signal to develop an internal control signal which is processed with said timing signal and a command signal to produce a drive signal for said drive amplifier means.

4,339,701
SWITCHING FREQUENCY STABILIZATION AND LOAD FAULT DETECTION IN SWITCHING AMPLIFIERS

Eric K. Pritchard, 1702 Plymouth Ct., Bowie, Md. 20716

Filed Apr. 11, 1980, Ser. No. 139,596
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **36 Claims**



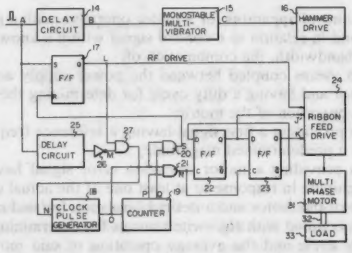
1. In a switching amplifier for driving inductive loads with output devices comprising a supply voltage; first means for sensing an input signal; non-linear transformer means responsive to said input signal for sensing the load current of said inductive load, for comparing said load current to high and low switching points of said amplifier, said switching points being a function of said transformer parameters, and for providing switching signals indicative of the load current attaining said high and low switch points; and second means for receiving said switching signal and for switching said output devices, the improvement comprising:

means responsive to the voltage across said inductive load for controlling said switching points such that the frequency of said switching signal is stabilized against variations in said supply voltage.

4,339,702
STEPPING MOTOR DRIVE APPARATUS

Shigeyuki Araki, and Hideyasu Yamanaka, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 8, 1980, Ser. No. 185,064
Claims priority, application Japan, Sep. 11, 1979, 54-116307
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **2 Claims**



1. A motor drive apparatus comprising a multi phase motor having a shaft and drive means for sequentially energizing the motor phases with a high drive current for rotating the shaft and for energizing a present motor phase with a low hold current for holding the shaft in a respective present position, characterized in that, prior to energizing a next motor phase for rotating the shaft away from the present position, the drive means is constructed to energize the present phase with the high drive current for a predetermined length of time.

4,339,703
TWO STEP PHASE RESET GYRO MOTOR POWER SUPPLY

William J. Rolff, Woodcliff Lake; Samuel Costa, Ringwood, and William A. Hendricks, Parsippany, all of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Sep. 3, 1980, Ser. No. 183,686
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—702 **5 Claims**

1. A phase control system for a gyro synchronous motor comprising:

means for detecting cyclical rotation of a reference point on a gyro flywheel and generating a position pulse in response to each rotational cycle;

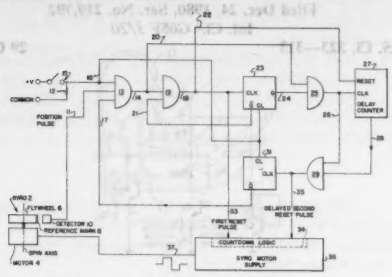
power supply means for a gyro synchronous motor;

means for connecting the output of the power supply means to a synchronous gyro motor; and

logic circuit means connected at its input to the detecting means at its output to an input of the supply means for providing a first reset pulse to the supply means which establishes a predetermined phase between the flywheel reference point and a vector of the synchronous motor rotating field;

wherein signal delaying means are included in the logic

circuit means for generating a second reset pulse delayed with respect to the first reset pulse for causing an additional phase shift of a preselected amount to occur thereby



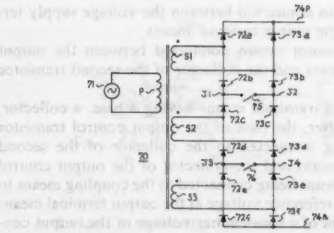
ensuring that the total phase shift exceeds a lag angle of the motor which might otherwise create uncertainty of data collected from a gyro.

4,339,704

SERIES PARALLEL TRANSITION FOR POWER SUPPLY

Lloyd W. McSparran, Erie, and Russell M. Smith, North East, both of Pa., assignors to General Electric Company, Erie, Pa.

Filed Jul. 7, 1980, Ser. No. 166,680
Int. Cl.[3] H02M 7/00; H02P 9/00
U.S. Cl. 322—90 **6 Claims**



1. In combination:

(a) a pair of d-c load buses;

(b) rectifying means having at least first and second legs interconnected in parallel circuit relationship between said buses, each of said legs comprising first, second, third, and fourth unilaterally conducting devices connected in series with one another and polled to conduct current in a direction from one of said buses to the other;

(c) an a-c power supply comprising at least first and second separate windings so arranged that in-phase alternating voltages of equal amplitudes are respectively generated therein;

(d) means for connecting said first winding between a point between the first and second devices of said first rectifier leg and a point between the corresponding devices of said second rectifier leg and for connecting said second winding between a point between the third and fourth devices of said first rectifier leg and a point between the corresponding devices of said second leg, whereby said windings are effectively connected in parallel between said buses; and

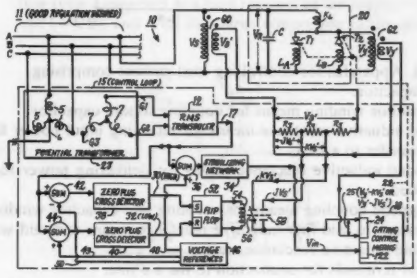
(e) means for interconnecting the respective junctures of the second and third devices in all of the legs of said rectifying means, said interconnecting means having open circuit and closed circuit states between which it is selectively switchable in response to transition command signals and being effective upon switching from open to closed circuit states to short circuit said junctures, whereby the connection of said first and second windings can be changed from parallel to series.

4,339,705

THYRISTOR SWITCHED INDUCTOR CIRCUIT FOR REGULATING VOLTAGE

Fred W. Kelley, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 49,825, Jun. 18, 1979. This application Mar. 11, 1981, Ser. No. 242,784
Int. Cl.[3] G05F 1/70
U.S. Cl. 323—210 **6 Claims**



1. In a regulating system of the type having: a reactive converter for delivering a leading or lagging current to compensate for a load of varying reactance; means for deriving a first signal representative of voltage at a critical area in the power system at which good voltage regulation is desired; means for deriving a second signal representative of a desired voltage regulation level; means responsive to said first and second signals for developing an error signal for said regulating system which is used to hold the first and second signals in close correspondence if within a desired range of the reactive converter; comparison means for sensing the non-correspondence between said first and second signals and developing in dependence upon said non-correspondence a command signal indicative of whether normal or transient conditions are present in the power system;

gating control means responsive to said command signal for supplying an output signal therefrom to the reactive converter so as to regulate the voltage at said critical area both during normal and transient conditions, wherein the reactive converter further comprises:

a. two circuit branches connected in parallel across said power system, each branch comprising an inductor and a thyristor connected in series, said thyristors being oppositely poled and each of said thyristor providing a unidirectional path through its inductor;

b. a capacitor connected across said power system in parallel with said two branches; and

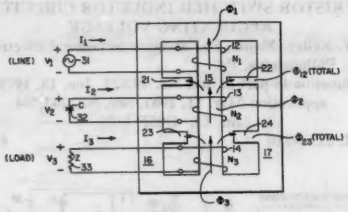
gating control means in effecting said voltage regulation during normal conditions causing each of thyristors to have a conduction angle of 180 degrees or less in response to said comparison means sensing the presence of normal power conditions in the power system and, in effecting said voltage regulation during transient conditions, causing each of said thyristors to have a conduction angle of greater than 180 degrees in response to said comparison means sensing the presence of transient power conditions in the power system.

4,339,706

CURRENT CONTROLLING

Alexander Kusko, Newton, Mass., assignor to Jodice Controls Corporation, Waltham, Mass.

Continuation of Ser. No. 581,876, May 29, 1975, abandoned.
This application Aug. 14, 1978, Ser. No. 933,646
Int. Cl.³ G05F *1/38*
U.S. Cl. 323—248 11 Claims



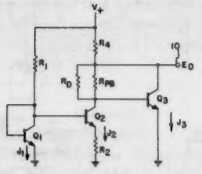
1. Apparatus for controlling load current comprising,
a capacitor,
capacitor winding means for coupling to said capacitor,
first inductive reactance means for receiving input power for transfer to a load,
second inductive reactance means for delivering power to a load,
magnetic coupling means for coupling said capacitor winding means to said first inductive reactance means and said second inductive reactance means,
input terminals for connection to the a-c line,
controlled switching means intercoupling said input terminals with said first inductive reactance means for delivering a voltage to said first inductive means with substantial harmonics of the a-c line frequency and controlled amplitude,
and means for controlling the conduction angle of said controlled switching means to control the amount of energy delivered to said first inductive reactance means,
said first and second inductive reactance means, said magnetic coupling means and said capacitor winding means being for coacting with said capacitor connected across said capacitor winding means for establishing the current delivered to a load through means including said second inductive reactance means as substantially sinusoidal with the harmonics of the a-c line frequency significantly attenuated directly proportional to the voltage applied to said apparatus through means including said first inductive reactance means independently of the load coupled to said second inductive reactance means,
said first inductive reactance means comprising an input winding,
said second inductive reactance means comprising a load winding,
there being a leakage reactance of $\omega N_3^2 P_{12}$ between said input and capacitor winding means referred to said load winding, a leakage reactance $\omega N_3^2 P_{23}$ between said load winding and said capacitor winding means referred to said load winding and a capacitive reactance of said capacitor $X_c N_3^2/N_2^2$ referred to said load winding means with the reactances $\omega N_3^2 P_{12}$ and $X_c N_3^2/N_2^2$ being substantially equal to each other at said a-c line frequency,
wherein ω is the radian frequency of the electrical power on said a-c line,
N_2 is the number of turns of said capacitor winding means,
N_3 is the number of turns of said load winding,
P_{12} is the permeance of the leakage flux path between said input winding and said capacitor winding means,
P_{23} is the permeance of the leakage flux path between said capacitor winding means and said load winding,
and X_c is the reactance of said capacitor.

4,339,707

BAND GAP VOLTAGE REGULATOR

James L. Gorecki, Plymouth, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Dec. 24, 1980, Ser. No. 219,792
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—313 29 Claims



1. An integrated circuit reference voltage source for providing a reference voltage at an output terminal means, the reference voltage source comprising:
first transistor means having a base, a collector, and an emitter, the base and collector being connected together;
first resistor means connected to the collector of the first transistor means;
second transistor means having a base, a collector, and an emitter, the base of the second transistor means being connected to the base of the first transistor means;
second resistor means connected to the emitter of the second transistor means;
a voltage supply terminal means for connection to a supply voltage;
coupling means connected between the voltage supply terminal and the output terminal means;
base pinch resistor means connected between the output terminal means and the collector of the second transistor means; and
output control transistor means having a base, a collector, and an emitter, the base of the output control transistor means being connected to the collector of the second transistor means and the collector of the output control transistor means being connected to the coupling means to control the reference voltage at the output terminal means as a function of a base-emitter voltage of the output control transistor means and a voltage developed across the base pinch resistor means.

4,339,708

TESTING APPARATUS FOR DIELECTRIC BREAKDOWN CAUSED BY TRACKING PHENOMENA

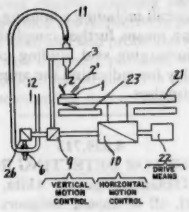
Mitsuru Saito, Hirakata; Yuji Karatani, Amagasaki; Wataru Sakurai, and Ken'ichi Nobuta, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 19, 1980, Ser. No. 122,660
Claims priority, application Japan, Feb. 20, 1979, 54-19178
Int. Cl.³ G01R *31/18*
U.S. Cl. 324—54 7 Claims

1. A testing apparatus for dielectric breakdown caused by tracking phenomena comprising:
a dripping nozzle;
a plurality of pairs of opposed electrodes each being adapted to be held in contact with one of a corresponding number of specimens to be tested;
moving means for successively moving the pairs of electrodes together with the specimens relative to the nozzle repetitively at an overall time interval but intermittently at a constant smaller time interval in a manner such that each specimen is stopped for a specified period when it is in a position immediately below the nozzle;
dripping control means for dripping a test solution from the nozzle to each specimen at a location between each pair of

electrodes when the specimen is immediately below the nozzle;

power supply means for supplying electric power to the plurality of pairs of electrodes;



power control means for controlling power supply condition for the electrodes and on-off condition therefor; and means for detecting current through each pair of electrodes.

4,339,709

DEVICE FOR MEASURING THE RELATIVE POSITION OF TWO OBJECTS

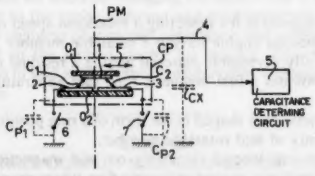
Gerard C. C. Brihier, Ollainville, France, assignor to Facom, Morangis, France

Filed Apr. 3, 1980, Ser. No. 136,766

Claims priority, application France, Apr. 9, 1979, 79 08919

Int. Cl.³ G01R *27/26*

U.S. Cl. 324—61 R **16 Claims**



1. A device for measuring the relative position of two objects by variation of capacitance, said device comprising in combination:

a capacitive detector of the differential type comprising at least two first electrodes for mechanically connecting to one of said objects, and at least one second electrode for mechanically connecting to the other of said objects and forming with the first electrodes two variable capacitances which vary as a function of the relative position of the objects, said two capacitances being in a ratio which is only a function of said relative position;

a circuit for determining the values of said capacitances;

switching means selectively connecting said capacitances to an input of said value determining circuit for successively measuring said capacitances and also the parasitic capacitance inherent in the measuring device.

4,339,710

MOS INTEGRATED TEST CIRCUIT USING FIELD EFFECT TRANSISTORS

Friedrich Hapke, Hamburg, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 1, 1980, Ser. No. 117,885

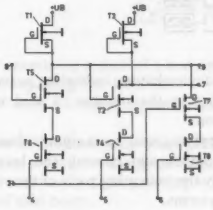
Claims priority, application Fed. Rep. of Germany, Feb. 12, 1979, 2905271

Int. Cl.³ G01R *15/12*

U.S. Cl. 324—73 R **1 Claim**

1. An MOS integrated circuit arrangement with field-effect transistors, in which the individual circuit block sections of the integrated circuit arrangement are interconnected by field-effect transistor switches which are switchable by external test signals, and in which each field-effect transistor is connected to a voltage no higher than ground through its substrate connection, characterized in that for testing at least two circuit blocks, an input block (EB1) and an output block (AB1), individually and in combination, at least three parallel field-effect transistor-switch groups are provided, each connecting to a common connection point (9) which is connected to the supply voltage (+UB) by a first field-effect transistor (T1) of the depletion type connected as a load resistor, the field-effect transistor-switch groups each comprising two series-connected field-effect transistors of the enhancement type, said switch groups further comprising:

a first group for testing the input block (EB1) and having a second field-effect transistor (T2) connected with its gate connection to the common connection point (9), with its drain connection both to a first external connection point (7) and by a third field-effect transistor (T3) of the depletion type, connected as a load resistor, to the supply voltage (+UB), and with its source connection to the drain



connection of a fourth field-effect transistor (T4) whose source connection is connected to ground and whose gate connection is connected to a first control line (5);

a second group for connecting and disconnecting the input block (EB1) and the output block (AB1) and having a fifth field-effect transistor (T5) connected with its drain connection to the common connection point (9), with its gate connection to the output (8) of the input block (EB1), and with its source connection to the drain connection of a sixth field-effect transistor (T6) whose source connection is connected to ground and whose gate connection is connected to a second control line (4);

a third group for testing the output block (AB1), in which the drain connection of a seventh field-effect transistor (T7) is connected to the common connection point (9), its gate connection is connected to a second external connection point (3), and its source connection is connected to the drain connection of an eighth field-effect transistor (T8) whose source connection is connected to ground and whose gate connection is connected to a third control line (6).

4,339,711

SPECTRUM DISPLAYING APPARATUS FOR MULTICHANNEL SIGNALS

Mamoru Inami, Yokohama, and Yoshiaki Tanaka, Tokyo, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jul. 9, 1980, Ser. No. 167,142

Claims priority, application Japan, Jul. 10, 1979, 54/87186; Aug. 24, 1979, 54/116406[U]; Aug. 31, 1979, 54/111412

Int. Cl.³ G01R *23/16*

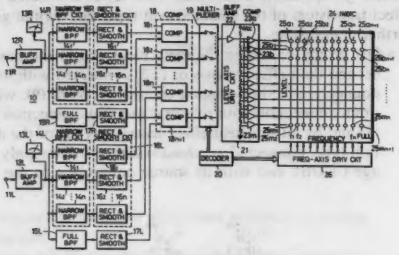
U.S. Cl. 324—77 E **7 Claims**

1. An apparatus for displaying the spectrum of multichannel signals comprising:

band-pass filtering circuits of a plurality of channels provided to respectively correspond to the channels of a plurality of channels, each of said band-pass filters of

respective channels comprising a group of band-pass filters having filtering bands having respectively different center frequencies and filtering by band dividing input signals;

level comparing means for at least rectifying respectively the outputs of band-pass filters mutually having the same filtering band of the band-pass filtering circuits of said plurality of channels, thereafter level comparing the same, and obtaining the band signal of the higher level;



an indication device having indicating parts of systems of the same number as the number of said band signals thus obtained; and

means for supplying said band signals thus obtained to said indicating device and causing the levels thereof to be displayed by the indicating parts of the respectively corresponding systems.

4,339,712

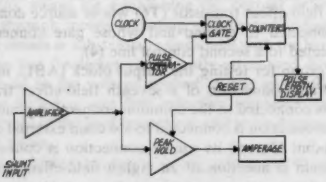
METHOD AND SYSTEM FOR MEASURING WIDTH AND AMPLITUDE OF CURRENT PULSE

William O. Walters, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed May 1, 1980, Ser. No. 145,547

Int. Cl.³ G01R *19/16;* G04F *8/00*

U.S. Cl. 324—102 **3 Claims**



1. A system for measuring and indicating width and amplitude of input signal current pulses comprising in combination:

a shunt;

means for amplifying the input signal voltage across said shunt;

a pulse comparator circuit responsive to said amplified input signal voltage;

counter circuit means;

clock gate circuit means coupled between said pulse comparator circuit and said counter circuit means;

amperage readout circuit means including a display for indicating the amplitude of said input signal current pulses;

a peak hold circuit coupled between said means for amplifying the input signal voltage across said shunt and said amperage readout circuit means;

pulse length display circuit means coupled to said counter circuit means, said pulse length display circuit means including a display for indicating the pulse length of said input signal current pulses;

reset switching means coupled to said counter circuit means for clearing said counter circuit means and resetting said display for indicating the pulse length of said input signal current pulses;

said peak hold circuit including a holding capacitor; and said reset switching means further coupled to said peak hold circuit for discharging said holding capacitor and resetting said display for indicating the amplitude of said input signal current pulses.

4,339,713

APPARATUS FOR DETECTING ROTATIONS

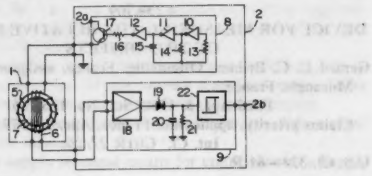
Yoshiyuki Kago, Okazaki; Sigeyuki Akita, Aichi, and Masao Kotera, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 12, 1980, Ser. No. 149,245

Claims priority, application Japan, May 25, 1979, 54/65320

Int. Cl.³ G01P *3/48, 3/54*

U.S. Cl. 324—173 **3 Claims**



1. An apparatus for detecting a rotational speed of an internal combustion engine having a rotatable member made of a magnetically permeable material having a residual magnetism which provides a first magnetic flux, said apparatus comprising:

a magnetic core shaped in the form of a ring positioned in the vicinity of said rotatable member;

a drive coil wound circularly on said magnetic core for generating a second magnetic flux when energized, said second magnetic flux passing through said magnetic core;

an energizing circuit connected to said drive coil for energizing said drive coil by periodic signals generated continuously and having both a predetermined amplitude and a predetermined frequency much higher than the maximum rotational frequency attainable for said rotatable member;

a detection coil wound diametrically on said magnetic core for generating output signals in proportion to changes in magnetic flux passing therethrough, said changes being caused by changes in said first and second magnetic fluxes resulting from the periodic energization of said drive coil and the rotation of said rotatable member; and

a detection circuit connected to said second coil for converting said output signals into pulse signals having a frequency proportional to the rotational speed of said rotatable member by subjecting said output signals to waveform detection.

4,339,714

PROBE HAVING PASSIVE MEANS TRANSMITTING AN OUTPUT SIGNAL BY REACTIVE COUPLING

Victor E. H. Ellis, Bristol, England, assignor to Rolls Royce Limited, London and Renishaw Electrical Limited, Gloucestershire, both of, England

Filed Jun. 25, 1979, Ser. No. 51,389

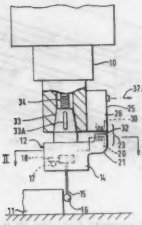
Claims priority, application United Kingdom, Jul. 7, 1978, 29116/78

Int. Cl.³ G01B *7/14;* G01R *33/00;* G01B *7/02*

U.S. Cl. 324—207 **6 Claims**

1. A machine tool comprising: a head, a probe detachably

secured to said head, said head being movable relative to a workpiece to bring said probe into a predetermined position relative thereto for the purpose of taking a measurement of said workpiece, a first electric circuit provided on said probe, said first electric circuit having no source of operative power, a second electric circuit provided on said head, a reactive coupling having adjacent electric coupling parts which are not wired together and which are respectively provided on opposing portions of said head and said probe and spaced apart by an air gap separating said opposing portions, said electrical coupling parts being respectively arranged in said first and second electric circuits, the coupling part arranged in the first circuit



being separable from the coupling part arranged in the second circuit upon detachment of said probe from said head, an oscillator connected to the second circuit to produce therein oscillations transmittable to the first circuit by virtue of said coupling when the probe is secured to the head, the first and second circuits cooperating to determine the impedance offered to said oscillations in said second circuit, means provided on the probe for stepwise changing the state of the first circuit responsive to the probe attaining said predetermined position to thereby stepwise change said impedance, and sensing means connected to the second circuit for sensing changes in the oscillations in said second circuit produced by a change in said impedance.

4,339,715

CARRIER-DOMAIN MAGNETOMETERS WITH COMPENSATION RESPONSIVE TO VARIATIONS IN OPERATING CONDITIONS

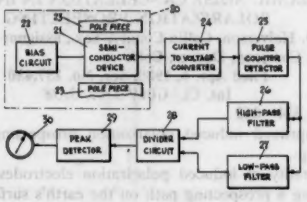
Greville G. Bloodworth, York, and Martin H. Manley, London, both of England, assignors to The General Electric Company Limited, London, England

Filed Apr. 23, 1980, Ser. No. 142,971

Claims priority, application United Kingdom, May 4, 1979, 7915666

Int. Cl.³ G01R *33/02;* H01L *29/82*

U.S. Cl. 324—252 **10 Claims**



1. A carrier-domain magnetometer provided with magnetic biassing means for subjecting the p-n-p-n structure of the magnetometer to a substantially constant magnetic field directed substantially parallel to the central axis of said structure and having a magnitude such that over a range of operating conditions of the semiconductor device the magnetometer will be biassed for operation on the linear part of its frequency/flux density characteristic, and means for monitoring the value of the ratio $(F-F_o)/F_o$ or a function thereof, where F represents the frequency of domain rotation when said structure is subjected to the biassing field together with a magnetic field to be sensed, and F_o represents the frequency of domain rotation when said structure is subjected to the biassing field in the absence of a field to be sensed.

4,339,716

NUCLEAR MAGNETIC RESONANCE SYSTEMS

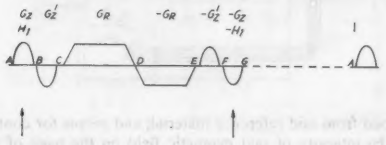
Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England

Filed Apr. 21, 1980, Ser. No. 142,130

Claims priority, application United Kingdom, May 23, 1979, 7918052

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—309 **9 Claims**



1. A method of examining a slice of a body by nuclear magnetic resonance, comprising the steps of:

applying to the body a steady magnetic field along an axis therein;

applying a first axial gradient magnetic field having a magnitude and having a gradient along said axis which, in conjunction with said steady field, gives a predetermined field in said slice of said body;

applying, in conjunction with said first axial gradient magnetic field, a first periodic magnetic field pulse at the Larmor frequency for the said predetermined field in said slide to cause resonance therein;

applying a second axial gradient magnetic field 180° displaced in phase from the first axial gradient magnetic field and at a proportion of the magnitude thereof to reduce phase dispersion in said slice;

applying, at an appropriate stage in the sequence of steps so as to produce spin-echo, a second periodic magnetic field pulse at said Larmor frequency, wherein the second periodic field pulse is applied in the absence of axial magnetic field gradients; and

sensing the resonance signal resulting from resonance in the slice, in the presence of further magnetic fields having gradients transverse to said axis.

4,339,717

NUCLEAR MAGNETIC RESONANCE SPECTROMETER

Munetaka Tsuda; Hiroshi Yokokawa, both of Katsuta, and Yoshiharu Utsumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

PCT No. PCT/JP78/00045, § 371 Date Aug. 15, 1979, § 102(e) Date Aug. 15, 1979, PCT Pub. No. WO79/00412, PCT Pub. Date Jul. 12, 1979

PCT Filed Dec. 8, 1978, Ser. No. 154,401

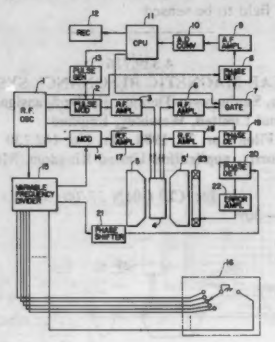
Claims priority, application Japan, Dec. 20, 1977, 52-153731

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—313 **2 Claims**

1. A nuclear magnetic resonance spectrometer comprising: means for generating a unidirectional magnetic field; means for placing a sample and a reference material in said unidirectional magnetic field; means for generating a radio frequency; means for supplying said radio frequency to said sample and to said reference material; means for detecting the resonance signal obtained from said sample and obtaining a nuclear magnetic resonance spectrum; a variable frequency divider capable of optionally dividing the frequency of said radio frequency; means for modulating one of said radio frequency irradiated to

said reference material and said magnetic field in accordance with the output signal of said variable frequency divider; means for obtaining an error signal from the resonance signal



obtained from said reference material; and means for controlling the intensity of said magnetic field on the basis of said error signal.

4,339,718

COIL ARRANGEMENTS

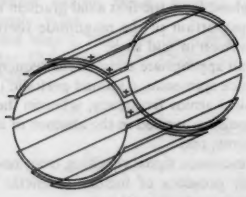
Eric W. Bull, Sunbury-on-Thames, and Robert D. Galloway, Weybridge, both of England, assignors to Picker International Limited, Wembley, England

Filed May 20, 1980, Ser. No. 151,612

Claims priority, application United Kingdom, May 25, 1979, 7918403

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—319 **6 Claims**



1. A coil arrangement having a given inductance and providing a substantially uniform magnetic field in a cylindrical region, the arrangement comprising:

a first set of conductors having a first inductance and being sinusoidally distributed around the region and extending parallel to the axis of said region so as to produce a first substantially uniform transverse magnetic field of first uniformity in said region when the coil arrangement is excited by an electric current; and

a second set of conductors having a second inductance and being sinusoidally distributed around said region in a corresponding manner to the first set of conductors, so as to produce, when the coil arrangement is excited, a second substantially uniform magnetic field of second uniformity in said region which opposes and is of smaller magnitude than said first uniform magnetic field;

wherein the resultant magnetic field has a uniformity corresponding to the less uniform of the first and second uniformities of said first and second uniform fields, and the given inductance of the coil arrangement being less than either of the first and second inductances of the first and second sets of conductors individually.

4,339,719

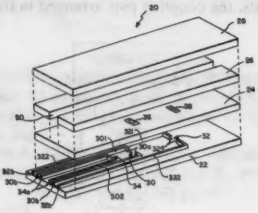
CONDUCTIVITY SENSOR FOR MONITORING CORRODENTS BEING DEPOSITED IN A STEAM TURBINE

Archie E. Rhines, and Steven B. Hugg, both of San Antonio, Tex., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 30, 1980, Ser. No. 173,679

Int. Cl.³ G01N *27/42*

U.S. Cl. 324—446 **34 Claims**



1. A conductivity sensor for use in a steam turbine in operation to monitor corrodents deposited therein, comprising:

a top substrate;

a first dielectric layer joined to the bottom of said top substrate, said first dielectric layer defining a crevice to entrap corrodents;

a second dielectric layer joined to the bottom of said first dielectric layer, said second dielectric layer having an aperture formed therein to define an opening at the bottom of said crevice;

a bottom substrate joined to the bottom of said second dielectric layer;

means for measuring the temperature at said bottom substrate; and

an electrode pair located on the top of said bottom substrate, an end of said electrode pair located in said aperture to pass a current therethrough to measure the conductivity of the corrodents therein.

4,339,720

TELLURIC NOISE CANCELLATION IN INDUCED POLARIZATION PROSPECTING

Mark O. Halverson, Collin County, Tex., assignor to The Anaconda Company, Denver, Colo.

Filed Apr. 4, 1980, Ser. No. 137,430

Int. Cl.³ G01V *3/02, 3/38*

U.S. Cl. 324—362 **11 Claims**

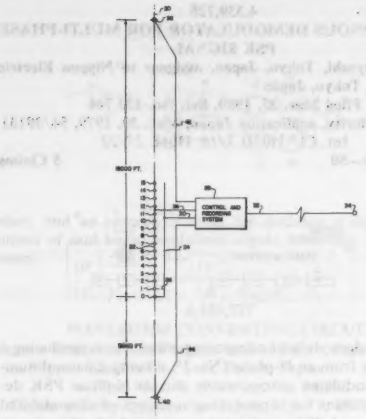
6. Improved induced polarization prospecting apparatus including:

a plurality of induced polarization electrodes distributed along a prospecting path on the earth's surface, at least one of said electrodes forming a current input electrode and the remaining of said electrodes forming a plurality of induced polarization sensing dipoles;

means coupled to said plurality of induced polarization sensing dipoles for detecting induced polarization signals;

first and second telluric noise sensing electrodes positioned along said path on opposite sides of said plurality of induced polarization electrodes and each spaced from the nearest of said at least one current electrode by a distance

at least 1.5 times the distance from said at least one current electrode to the most distant of said sensing dipoles; and



means coupled to said first and second telluric noise sensing electrodes for detecting telluric noise.

4,339,721

ELECTROSTATIC VOLTMETER

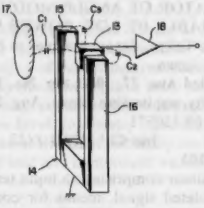
Yasuo Nihira, and Takuya Hosoda, both of Tokyo, Japan, assignors to Ando Electric Co., Ltd., Tokyo, Japan

Filed May 27, 1980, Ser. No. 153,234

Claims priority, application Japan, Jun. 6, 1979, 54-76766[U]; Jun. 19, 1979, 54-83765[U]

Int. Cl.³ G01N *27/00*

U.S. Cl. 324—457 **7 Claims**



1. An electrostatic voltmeter for measuring the surface potential of a charged body through capacitive division, comprising a detecting electrode locatable in confronting relation to the charged body, and a vibrating element including a pair of parallel spaced legs between which said detecting electrode is disposed in spaced relation, said vibrating element being vibratable to enable said legs to move toward and away from the charged body.

4,339,722

DIGITAL FREQUENCY MULTIPLIER

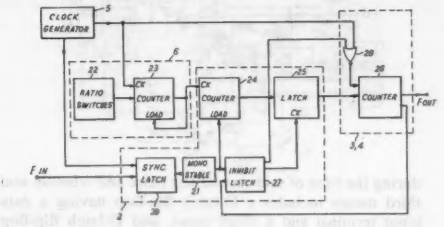
Philip R. Sydor, Tadley, and Graham J. Brooker, Hungerford, both of England, assignors to Micro Consultants Limited, Berkshire, England

Filed May 20, 1980, Ser. No. 151,546

Claims priority, application United Kingdom, May 23, 1979, 7918058

Int. Cl.³ H03K *21/30*

U.S. Cl. 328—38 **22 Claims**



1. A digital frequency multiplier comprising:

a first path and a second path,

a first source of clock pulses and a second source of clock pulses for supplying said first and second paths respectively,

divider means in said first path for dividing the first clock pulses relative to the incoming rate,

first counter means in said first path, said first counter means having a first input for receiving an incoming frequency and for determining the number of pulses occuring from said first source during the period between sequential cycles of said incoming frequency,

holding means for periodically holding the count determined by said first counter means updated at a rate dependant on the incoming frequency,

second counter means in said second path for counting the number of clock pulses from said second source,

comparator means connected to receive the outputs of the first and second paths respectively to produce an output signal having a repetition frequency which is a multiple of the incoming frequency, and

inhibit means for momentarily inhibiting a change in the count provided by said second counter means whenever the holding means is being updated.

4,339,723

PULSE WIDTH DISCRIMINATOR

Henry C. Yee, Royal Oak, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Division of Ser. No. 942,003, Sep. 13, 1978. This application Jan. 24, 1980, Ser. No. 114,795

Int. Cl.³ H03K *5/22*

U.S. Cl. 328—111 **3 Claims**

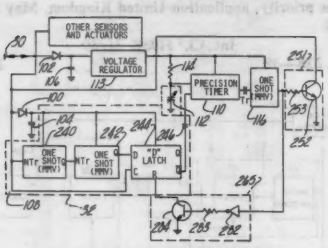
1. A pulse width discriminator having an input terminal adapted to receive signals where one of said signals has a pulse width of duration t_1, said pulse width discriminator comprising:

first means responsive to the beginning of each signal appearing at the input terminal line, for generating a first test pulse of duration $(t_i - \Delta)$;

second means, responsive to the termination of said first test pulse for generating a second test pulse having a duration 2Δ wherein 2Δ corresponds to a time increment smaller than t_i wherein said first means includes a first monostable multivibrator for generating said first test pulse, in response to the beginning edge of said received signals, and wherein said second means includes a second monostable multivibrator disposed between said first and a third

means responsive to the termination of said first test pulse for generating said second test pulse; and

third means, responsive to said signals and said second test pulse, for generating a trigger signal indicative of the condition that said signal of duration t_f has terminated



during the time of said second test pulse and wherein said third means includes a D-latch flip-flop having a data input terminal and a clock input, said D-latch flip-flop receiving said second test pulse at said data input terminal and connected so that the state of the flip-flop is clocked by the trailing edge of the received signals.

4,339,724

FILTER

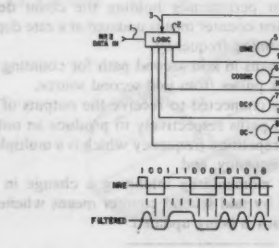
Kamilo Feher, Unit 37, 3565 Downpatrick, Ottawa, Ontario, Canada K1V 8T3

Filed Feb. 8, 1980, Ser. No. 119,899

Claims priority, application Canada, May 10, 1979, 327365

Int. Cl.³ H03K *13/32, 12/00, 5/01*

U.S. Cl. 328—164 **7 Claims**



1. A filter having an input for receiving a pulse signal form of binary information and an output for providing a synthesized output signal correlated to the input signal comprising:

(a) means for comparing the output signal with the input signal one bit at a time,

(b) means connected to said comparing means and said output for generating a first predetermined output signal waveform when the output signal bit is different from that of the input signal and the input signal is binary "1",

(c) means connected to said comparing means and said output for generating a second predetermined output signal waveform when the output signal bit is different from that of the input signal and the input signal is binary "0",

(d) means connected to said comparing means and said output for generating a third predetermined output signal waveform when the output signal bit is the same as that of the input signal and the input signal is binary "1",

(e) means connected to said comparing means and said output for generating a fourth predetermined output signal waveform when the output signal bit is the same as that of the input signal and the input signal is binary "0",

in which the predetermined output signals are continuous, whereby the spectra and sidelobes of the output signal which is correlated to the input signal are controlled to a predetermined extent.

4,339,725

SYNCHRONOUS DEMODULATOR FOR MULTI-PHASE PSK SIGNAL

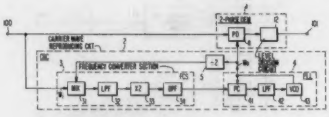
Osamu Ichiyoshi, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1980, Ser. No. 133,744

Claims priority, application Japan, Mar. 30, 1979, 54/39131

Int. Cl.³ H03D *3/18;* **H04L** *27/22*

U.S. Cl. 329—50 **5 Claims**



1. A PSK demodulator comprising, means for reproducing a carrier wave from an N-phase ($N=2^n$, n being a natural number) PSK-modulated carrier wave, and an N-phase PSK demodulating means for reproducing n strings of demodulated signals from said PSK-modulated carrier wave in response to said PSK-modulated carrier wave and said reproduced carrier wave, wherein said carrier reproducing means comprises, means for generating said reproduced carrier wave phase-synchronized with an unmodulated carrier wave applied as an input thereto; means for dividing the frequency of said reproduced carrier wave by two to generate a frequency-divided carrier wave; and frequency converter means for generating said unmodulated carrier wave in response to said PSK carrier wave and said frequency-divided carrier wave, wherein said frequency converter means consists of n frequency converter circuits connected in series, each having first and second inputs and an output, the output from each frequency converter circuit being applied as the first input of the succeeding frequency converter circuit except that said N-phase PSK-modulated carrier wave is applied as the first input of the first said frequency converter circuit and the output of said last frequency converter circuit is said unmodulated carrier wave, said frequency-divided carrier wave being applied as the second input to each said frequency converter circuits, each of said frequency converter circuits comprising frequency mixing means for frequency mixing its respective first and second inputs and frequency multiplying means for frequency-multiplying the output of said frequency mixing means and supplying said unmodulated carrier wave as its respective output.

4,339,726

DEMODULATOR OF ANGLE MODULATED SIGNAL OPERABLE BY LOW POWER VOLTAGE

Masami Miura, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Aug. 27, 1980, Ser. No. 181,930

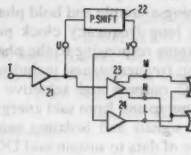
Claims priority, application Japan, Aug. 29, 1979, 54-110570; Aug. 29, 1979, 54-110571

Int. Cl.³ H03D *3/22*

U.S. Cl. 329—103 **10 Claims**

1. A demodulator comprising an input terminal for receiving an angle modulated signal, means for converting said angle modulated signal into first and second signals having their phases opposite to each other, phase shift means for shifting the phase of a signal having information of said angle modulated signal by a value in accordance with the discrepancy of the frequency thereof from the center frequency of said angle modulated signal, a first OR circuit means, connected to receive as inputs said first signal and the output of said phase shift means, for providing at its output the larger of the two inputs applied thereto, a second OR circuit means, connected to receive as inputs said second signal and the output of said phase

shift means, for providing at its output the larger of the two inputs applied thereto, means for subtracting the respective outputs of said first and second OR circuit means from each



other, and an output terminal for deriving a demodulated output of said angle modulated signal from said subtracting means.

4,339,727

WAVEFORM CONVERTING CIRCUIT

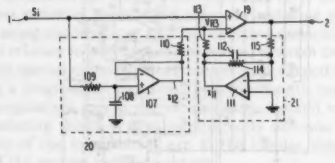
Kouzou Kage, and Ikio Yoshida, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 7, 1979, Ser. No. 18,396

Claims priority, application Japan, Mar. 7, 1978, 53-26367; Mar. 7, 1978, 53-26368

Int. Cl.³ H03K *9/08*

U.S. Cl. 329—106 **6 Claims**



1. A waveform converting circuit for receiving an input data signal having an a.c. component varying between high and low levels and providing an output having level variations corresponding to said a.c. component, said circuit comprising:

a high pass filter for filtering said input data signal to provide a comparison signal;

a comparator having a comparison signal input terminal supplied with said comparison signal and reference signal input terminal coupled to a reference voltage point for comparing the voltages of said comparison signal and said reference voltage point; and

a positive feedback means including a resistor and coupled between the output of said comparator and said comparison signal input terminal, for compensating the output d.c. variation of said high pass filter during any period when said input data signal is continuously high or low, whereby the output of said comparator will have a level corresponding to the level of said input data signal even when said input data signal remains continuously at one of said high and low levels to thereby reproduce a data signal having variations of duration faithfully corresponding to the durations of said a.c. component variations.

4,339,728

RADIO RECEIVER SIGNAL AMPLIFIER AND AGC CIRCUIT

Dennis M. Monticelli, Fremont, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

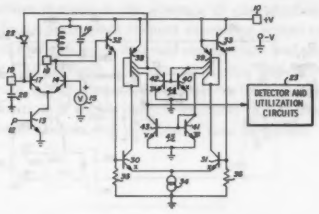
Filed Feb. 11, 1980, Ser. No. 120,209

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—254 **9 Claims**

1. A combined signal amplifier and automatic gain control (AGC) circuit for use in a radio receiver responsive to a modulated carrier signal to produce a signal output characteristic of the modulation on said carrier signal, said receiver having an AGC with a threshold higher than the threshold of response to said carrier signal, said circuit comprising:

a differential amplifier having a first input coupled to a source capable of supplying said modulated carrier signal within said receiver, a second input coupled to a source of reference potential, and first and second differential outputs;



a first current mirror load coupled to said first differential output and having a single ended output coupled to an AGC detector;

a second current mirror load coupled to said second differential output and having a single ended output coupled to a signal detector; and

means within said first and second current mirror loads for ratioing the thresholds of said AGC detector and said signal detector.

4,339,729

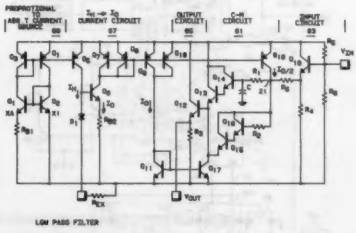
ANALOG INTEGRATED FILTER CIRCUIT

Barry L. Jason, Bedford; Scott M. Hall, Fort Worth, and Richard L. Valley, Bedford, all of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 27, 1980, Ser. No. 134,382

Int. Cl.³ H03F *1/34*

U.S. Cl. 330—294 **10 Claims**



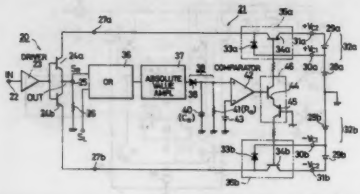
1. An analog integrated filter comprising: capacitance multiplier means, including a capacitor (C), having a first and a second terminal, for providing an effective capacitance Mf times that of the capacitor, and including a feedback impedance dependent upon an applied current; resistance means, coupled to the capacitance multiplier means, for providing resistance operative in conjunction with the effective capacitance to provide filtering; and, DC bias-controlled current supplying circuit, coupled to the capacitance multiplier means, for providing a DC bias-controlled current having a temperature dependence which substantially cancels the cumulative temperature dependence of the feedback impedance and the resistance means, so that the filter has a constant operating frequency response characteristic as the filter operates over a range of temperatures.

4,339,730

AMPLIFIER WITH POWER SUPPLY SWITCHING

Kenji Yokoyama, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Mar. 24, 1980, Ser. No. 133,308
Claims priority, application Japan, Jul. 27, 1979, 54-95831; Jul. 27, 1979, 54-95832
Int. Cl.³ H03F 3/04
U.S. Cl. 330—297 26 Claims



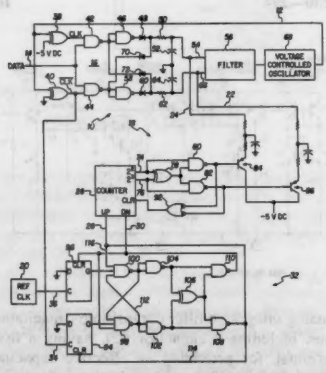
1. An amplifier with power supply switching, comprising:
an amplifying element for amplifying the input signal to said amplifier;
a peak-holding circuit for holding, for a predetermined period of time, a peak value of a signal which varies in accordance with said input signal; and
a switching circuit for selectively supplying to said amplifying element a supply voltage level selected from among at least two available supply voltage levels in accordance with a level of an output of said peak-holding circuit.

4,339,731

STABLE, FAST SLEW, PHASE LOCKED LOOP

Tello D. Adams, Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jun. 5, 1980, Ser. No. 156,534
Int. Cl.³ H03D 13/00; H03L 7/08
U.S. Cl. 331—1 A 12 Claims



1. In a phase lock loop, the improvement comprising a phase insensitive frequency comparator for comparing the frequency of said loop against a reference frequency for stabilizing the former, wherein said phase insensitive frequency comparator comprises means for counting loop frequency pulses and reference frequency pulses, and means responsive to a given differential between counted pulses for adjusting loop frequency and further wherein said phase insensitive frequency comparator comprises an up/down counter incremented one way by said loop frequency pulses and incremented the other way by said reference frequency pulses, said counter having given overflow and underflow set points yielding error correction signals changing said loop frequency.

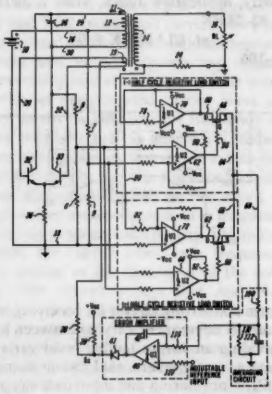
3. In a phase lock loop, the improvement comprising a phase insensitive frequency comparator for comparing the frequency of said loop against a reference frequency for stabilizing the former, and further comprising a sample and hold phase detector for gating data against loop frequency clock pulses and generating a pair of DC outputs responsive to the phase therebetween for controlling loop frequency, and including energy storage means for said DC outputs and selective isolation means permitting current flow to and from said energy storage means in response to data signals and isolating said energy storage means in the absence of data to sustain said DC outputs for a given time.

4,339,732

CLOSED LOOP CONSTANT CURRENT TUNED OSCILLATOR

Hari M. Kesarwani, Cypress, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 25, 1980, Ser. No. 172,093
Int. Cl.³ H02M 1/08, 3/335; H03L 5/00
U.S. Cl. 331—109 4 Claims



1. In a circuit for providing constant current to a varying load including a tuned oscillator network comprised of a transformer having a primary winding, a secondary winding and a feedback winding, a capacitor connected across said primary winding, first and second switching means coupled to said primary winding and said feedback winding, and a source of direct current coupled to said primary winding and to said first and second means,
characterized in that
a sense resistor is coupled to said secondary winding and said load and a feedback network is coupled to said sense resistor and said feedback winding, said feedback network including third and fourth switching means, electronic buffer means connecting the voltage across said sense resistor to input terminals of said third and fourth switching means whereby only one or the other of said third and fourth switching means conducts during consecutive half cycles of the AC voltage across said primary winding, a voltage averaging circuit connected to the output terminals of said third and fourth switching means for developing a voltage proportional to the load current output of said transformer, and an error amplifier coupled to said averaging circuit and said feedback winding to provide to said feedback winding a control voltage responsive to changes in the voltage developed by said averaging circuit whereby variations in said control voltage cause changes in the current conduction of said first and second switch-

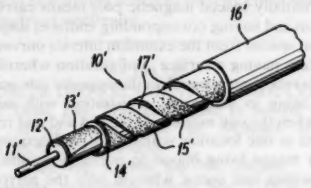
ing means to compensate for variations in core loss of said transformer and variations in said load such that current flow through said load is substantially constant.

4,339,733

RADIATING CABLE

Kenneth I. Smith, Lubec, Me., assignor to Times Fiber Communications, Inc., Wallingford, Conn.

Filed Sep. 5, 1980, Ser. No. 184,527
Int. Cl.³ H01P 3/06
U.S. Cl. 333—237 9 Claims



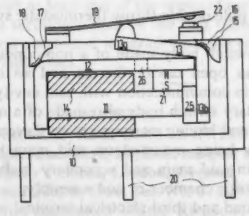
1. A radiating cable comprising a center conductor, a cylindrical dielectric core surrounding said conductor, a first radiating sheath disposed along the length of said dielectric core surrounding said center conductor in coaxial relation to said center conductor, an intermediate dielectric layer surrounding said first radiating sheath, and a second radiating sheath disposed along the length of said intermediate dielectric layer in coaxial relation to said center conductor, wherein each of said first and second radiating sheaths is a tubular shaped metal tape having a longitudinal gap along its entire length and wherein said longitudinal gap in the tubular shaped metal tape of the first radiating sheath is positioned directly opposite the radial position of the longitudinal gap in the tubular shaped metal tape of the second radiating sheath.

4,339,734

ENCASED MINIATURE RELAY

Werner Minks, Kleingeschaidt, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 4, 1980, Ser. No. 118,013
Int. Cl.³ H01H 51/22
U.S. Cl. 335—78 12 Claims



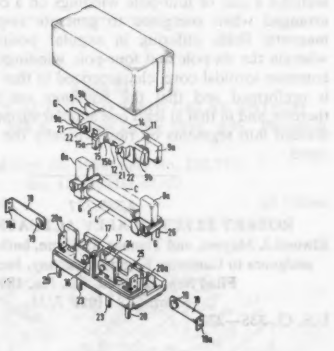
1. Encased bistable miniature relay comprising an electric switching element movable between two end positions; means for selectively moving said switching element between said end postions, including an electrically energizable coil having an internal passage, a core partially received in said passage and having an extension projecting out of said passage, a yoke connected to said core and having an end portion substantially coextensive with said extension at a spacing therefrom, an armature having a first and a second arm which extend at an obtuse angle relative to one another to delimit a corner region therebetween, and means for mounting said armature so that said extension and said end portion are situated in and said switching element is situated across one of said arms from said corner region, and for angular displacement between a first position in which said first arm is proximate to and bridges the spacing between said extension and said end portion and a second position in which said second arm is proximate to said end portion, said one arm acting on said switching element to move the same toward one of said end positions thereof as said armature is displaced from one to the other of said positions thereof; and means for holding said armature in the then assumed position thereof in the absence of energization of said coil, including a permanent magnet extending across said spacing between said extension and said end portion and generating a magnetic flux through said extension, said end portion and said armature which attracts said first arm to said extension in said first position of said armature and said second arm to said end portion in said second position of said armature.

4,339,735

ELECTROMAGNETIC RELAY

Kenji Ono, Yawata; Kazuhiro Nobutoki, Kadama, both of Japan, and Hans Sauer, Fichtenstrasse 5, Deisenhofen, Fed. Rep. of Germany (D-8024), assignors to Matsushita Electric Works, Ltd., Osaka, Japan and Hans Sauer, Deisenhofen, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,049
Claims priority, application Japan, Jul. 18, 1979, 54-91836
Int. Cl.³ H01H 50/28, 50/58
U.S. Cl. 335—119 7 Claims



1. An electromagnetic relay comprising
(a) an armature block including a pair of armatures and a permanent magnet supported therebetween to magnetize the armatures to opposed polarities, each armature having a portion in contact with said permanent magnet and ends extending beyond said portions,
(b) a pair of relay contacts operated by said armature block,
(c) a bracket-shaped yoke having projecting ends each disposed in an air gap between the corresponding ends of said armatures,
(d) an exciting coil connected to a power supply for energizing said yoke, and
(e) a resilient arm supporting said armature block in such a manner that said block may be rotated selectively toward said projecting ends of said yoke, said resilient arm extending from said block in a direction perpendicular to the axis of rotation of said armature block and being secured at its outer end.

4,339,736

CONVERGENCE UNIT FOR CATHODE-RAY TUBE

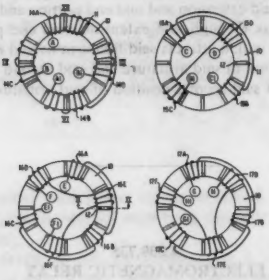
Peter Burr, Winchester, and Brian D. Chase, Eastleigh, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 8, 1981, Ser. No. 271,739

Claims priority, application European Pat. Off., Jun. 13, 1980, 80301992.6

Int. Cl.³ H01H *1/00*

U.S. Cl. 335—213 3 Claims



1. A convergence unit for use with an in-line gun shadow mask cathode-ray tube, comprises means for generating six-pole and four-pole magnetic fields centered on the central axis of the tube neck, wherein the means for generating the six-pole magnetic fields includes a pair of six-pole windings on a common core and arranged when energized to generate respective six-pole magnetic fields differing in angular position by 30°, wherein the means for generating the four-pole magnetic fields includes a pair of four-pole windings on a common core and arranged when energized to generate respective four-pole magnetic fields differing in angular position by 45°, and wherein the six-pole and four-pole windings are on the same common toroidal core, characterized in that the toroidal core is preformed and that the windings are formed in place thereon, and in that at least one annular surface of the toroid is divided into segments by ribs, whereby the windings are located.

4,339,737

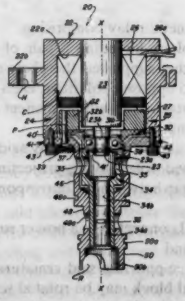
ROTARY ELECTRICALLY ACTUATED DEVICE

Elwood J. Meyers, and Thomas A. Glynn, both of Rockford, Ill., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 22, 1980, Ser. No. 189,704

Int. Cl.³ H01F *7/13*

U.S. Cl. 335—272 9 Claims



1. A rotary electrically actuated device comprising a stator member having a base section, a post projecting from said base section and having a distal end, and a plurality of extensions protruding from said base section and being in spaced substantially symmetrical relation with respect to said post, said extensions having interior curved surfaces spaced from the exterior of said post, said interior surfaces coacting with said base section to form a cavity having an open end adjacent said post distal end; coil means disposed within said cavity and having means for connecting to a source of electricity; rotor means in supporting engagement with said post distal end and rotatable through a predetermined sector, said rotor means including a first section extending into said cavity and having a curved peripheral surface disposed adjacent the extension interior surfaces and conforming substantially to the curvature thereof, circumferentially spaced magnetic pole means carried on said first section and having corresponding endfaces disposed adjacent to, but spaced from the extension interior curved surfaces, each endface having a surface configuration wherein one side portion thereof is narrower than the opposite side portion, said endfaces being in substantial registration with said curved surfaces when the coil means is energized and said rotor means is disposed at one location within said predetermined sector, said rotor means being biased to normally assume a second location within said sector wherein only the narrow surface side portions of said pole means endfaces are disposed adjacent the interior surfaces of said extensions and the remainder of the endfaces are out of registration with said extension interior surfaces, said rotor means including a second section extending from said first section and away from said coil means.

4,339,738

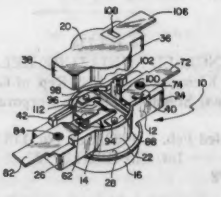
SINGLE POLE DOUBLE THROW THERMOSTATIC SWITCH

Robert J. Colavecchio, Johnston, R.I., assignor to Elmwood Sensors Inc., Cranston, R.I.

Filed Apr. 30, 1981, Ser. No. 259,241

Int. Cl.³ H01H *37/52*

U.S. Cl. 337—354 8 Claims



1. A single pole double throw thermostatic switch assembly comprising:

a. a main switch body made of a non-conductive material having an open cavity therein and an opening therethrough in communication with said cavity;

b. a secondary switch body also made of a non-conductive material and having an open cavity therein, said secondary body being mounted on said main body with the cavities in said main and secondary bodies defining an open interior chamber in said assembly;

c. first, second and third electrical terminal means mounted on the exterior of said assembly;

d. a fixed contact mounted within said cavity and electrically connected to said second terminal means;

e. a bendable fixed contact arm mounted within said cavity with a portion of said arm being adjacent to but spaced above said fixed contact, said bendable contact arm being electrically connected to said third terminal means;

f. a resilient contact arm mounted within said cavity electrically connected to said first terminal means, a portion of said resilient arm being interposed between said fixed contact arm and said fixed contact with said resilient arm being normally spaced from said bendable arm and biased to engagement with said fixed contact but being movable

to an alternative position of spaced disengagement from said fixed contact and engagement with said bendable fixed contact arm to alternatively effect electrical continuity between said first terminal means and said second or third terminal means;

g. a bimetallic disc responsive to a predetermined temperature change for exerting a flexing action disposed at the bottom end of said assembly adjacent to said opening;

h. means for mounting said disc at said bottom end without restricting the central portions thereof to permit the unrestricted flexing of said disc; and

i. means communicating with said disc for alternatively effecting the engagement of said resilient arm with said fixed contact or said bendable fixed contact arm in response to said flexing action to thereby effect said alternative electrical continuity.

4,339,739

LINEAR DISPLACEMENT TRANSDUCER

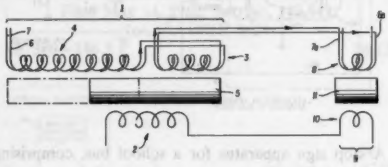
Sylvain M. Dron, Buc, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, "S.N.E.C.M.A.", Paris, France

Filed Nov. 5, 1980, Ser. No. 204,341

Claims priority, application France, Nov. 5, 1979, 79 27620

Int. Cl.³ H01F *21/06*

U.S. Cl. 336—136 **11 Claims**



1. A hybrid-coil linear displacement transducer comprising:

a base provided with plural recesses along the length of said base;

a first transformer including a primary coil and two secondary coils having a different number of turns, said secondary coils connected in series and in opposition and wound overlapping with respect to each other facing the primary coil, said secondary coils comprising a pair of windings each made of two simultaneously wound wires;

a coupling core moving between said primary coil and said secondary coils so as to cause the voltage induced at the terminals of the secondary coils to vary accordingly; and

a second tr...nsformer comprising a secondary coil connected in series with at least one of the wires of one of the windings of the secondary coils of the first transformer and a primary coil connected in series with the primary coil of the first transformer.

4,339,740

THERMALLY RESPONSIVE SWITCHES

Keith Greenhalgh, Lancashire, England, assignor to The General Electric Company Limited, London, England

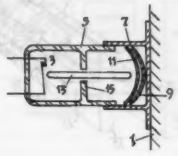
Filed Jun. 8, 1981, Ser. No. 271,247

Claims priority, application United Kingdom, Jun. 6, 1980, 8018670

Int. Cl.³ H01H *61/00*

U.S. Cl. 337—39 **3 Claims**

1. A thermally responsive electric switch including first and second snap-over bimetallic substantially part-spherical thermally responsive actuating elements which reverse curvature with a snap-action in operation, the two elements being disposed at one end of a housing so that their centres move along a common axis in operation coaxial with the housing axis; a pair of electrical contacts disposed at the other end of said housing; a common force transmitting member arranged to transmit the movement of either plate to the contacts, the contacts being in a first condition only when both plates have a first curvature, the contacts otherwise being in a second condition, the first element reversing from its first curvature to its second curvature when its temperature rises above a first predetermined temperature, and returning to its first curvature if its temperature subsequently falls below a second, lower, predetermined temperature, and said second element reversing from its first curvature to its second curvature when its temperature rises above a third predetermined temperature higher than said first predetermined temperature and thereafter retaining this curvature regardless of temperature, at least over a



range extending appreciabl below said second predetermined temperature, thus maintaining the switch contacts in their second condition including the improvement that said first and second elements are dimensionally substantially identical and are freely supported between the force transmitting member and the adjacent end of the housing, so as to lie in nesting contacting relationship, concave towards said member when both elements have their first curvature, the element nearer the force transmitting member bearing directly on the end of said member and the other element bearing on said end of said member via said nearer element.

4,339,741

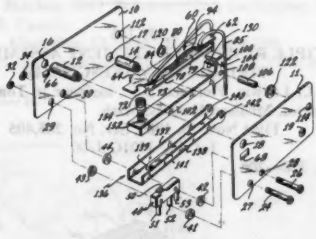
THERMALLY ACTUATED TIME DELAY SWITCH

William A. Ray, 888 S. Orange Grove Blvd. #3E, Pasadena, Calif. 91105

Filed Oct. 31, 1980, Ser. No. 202,772

Int. Cl.³ H01H *61/02*

U.S. Cl. 337—124 **16 Claims**



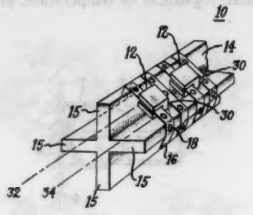
1. In a thermally actuatable switch in combination, a unit including a deformable heat responsive element, the unit forming an enclosure, electrical resistance means positioned within the enclosure to provide a source of heat within the enclosure, the said thermally responsive element having exposure to the exterior of the unit to allow dissipation of heat externally from the unit, means including electrical contacts operable by deformation of the heat responsive element whereby the time for response due to heating and for response due to cooling can be separately controlled.

4,339,742

HIGH VOLTAGE FUSE HAVING MOUNTED GAS EVOLVING MEMBERS AND METHOD OF FORMING SUCH

John G. Leach, Hickory, N.C., and Robert E. Koch, Pittsfield, Mass., assignors to General Electric Company, Philadelphia, Pa.

Filed Jun. 4, 1981, Ser. No. 270,561
Int. Cl.³ N01H *85/44*
U.S. Cl. 337—279 7 Claims



1. A high voltage current limiting fuse having a generally tubular electrically insulating casing, terminal means disposed adjacent to each of the opposite ends of the said casing, and a pulverulent arc quenching filler within said casing, said high voltage current limiting fuse further comprising:

a core of cross or star-shaped transverse cross-section comprising a plurality of fins, said core axially and longitudinally extending between the opposite ends of said casing;

one or more ribbon-type fuse elements having a predetermined width and thickness, said fuse element being wound about said core;

a plurality of gas evolving members adapted to evolve a gas in the presence of an arc which aids in the extinction of the arc within said casing, said gas evolving members being mounted over a portion of at least one said fuse elements, each of said plurality of gas evolving members having a narrow slit, said slit having dimensions relative to the dimensions of said one or more fuse elements to allow the gas evolving member to be slipped over the edge of the ribbon-type fuse element and cover all or part of the width of a portion of the fuse element;

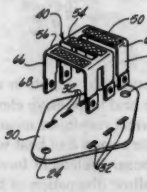
said plurality of gas evolving members being mounted onto the one or more fuse elements at predetermined locations along the core so as to arrange each of the plurality of gas evolving members between the fins of the core.

4,339,743

MULTIPLE RESISTANCE ELEMENT ASSEMBLY AND METHOD OF MAKING SAME

George C. Ludwig, Florence, S.C., assignor to Tom McGuane Industries, Madison Heights, Mich.

Filed Nov. 10, 1980, Ser. No. 205,405
Int. Cl.³ H01C *3/00*
U.S. Cl. 338—206 22 Claims



1. A multiple resistance element assembly comprising:

a planar insulator base having two parallel surfaces; and

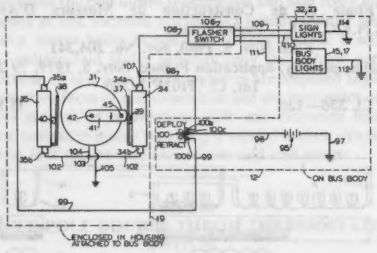
a multiple resistance element attached to said base, said multiple resistance element having a plurality of expanded metal resistance members disposed parallel to each other and serially connected by contiguous non-expanded metal interconnections joining the ends of adjacent resistance members in an alternating sequence, said non-expanded metal interconnections further providing means for fixedly supporting said plurality of resistance members a predetermined distance above one parallel surface of said base and for providing separate electrical terminals to the opposite ends of each resistance member protruding from the other parallel surface of said base.

4,339,744

SCHOOL BUS STOP SIGN

Joseph E. Latta, Jr., Rte. 4, Box 56A, Hillsborough, N.C. 27278

Filed Mar. 30, 1981, Ser. No. 249,110
Int. Cl.³ B60Q *1/46*
U.S. Cl. 340—133 2 Claims



1. A stop sign apparatus for a school bus, comprising in combination:

(a) a housing having integrally joined walls to provide a box-like internal housing cavity and means enabling said housing to be releasably secured to an exterior school bus sidewall;

(b) a unidirectional DC motor mounted and secured within said housing;

(c) a sign mounting and linkage arrangement including switch actuator means positioned by said motor and linkage members connected to be actuated by said motor;

(d) a sign member with warning lights mounted thereon and having an inner edge portion secured to said linkage members and adapted to being normally pivoted by said sign mounting and linkage arrangement between a retracted position in which it extends rearwardly and parallel to said bus sidewall and a deployed position in which it extends outwardly and perpendicular to said bus sidewall;

(e) first and second normally closed limit switches mounted in opposed positions proximate said motor and switch actuation means, said first switch being arranged to be contacted by said switch actuator means when said sign is in said deployed position and said second switch being arranged to be contacted by said switch actuator means when said sign is in said retracted position;

(f) a manual single pole double throw electric switch within said bus in a position accessible to the driver of said bus, said switch having a deploy and retract position corresponding to deployment and retraction of said sign member;

(g) first circuit means including connecting wiring enabling said motor to be connected to the bus battery through said second limit switch in a first circuit configuration when said control switch is moved to its said deploy position with said actuator means being in contact with said first limit switch and in which first circuit configuration said linkage arrangement is actuated by said motor shaft rotating in a given direction to move said sign member to said deployed position whereupon said second limit switch is

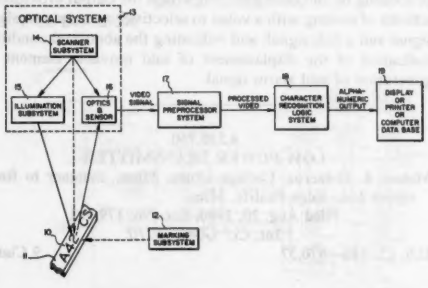
electrically opened by contact with said actuator means and said battery is disconnected from said motor and enabling said motor to be connected to the bus battery through said first limit switch in a second circuit configuration when said control switch is moved to its said retract position with said actuator means being in contact with said second limit switch and in which said second circuit configuration said linkage arrangement is actuated by said motor shaft rotating in the same said direction to move said sign member to said retracted position whereupon said first limit switch is electrically opened by contact with said actuator means and said battery is disconnected from said motor; and

(h) second circuit means including a circuit interrupter, said first circuit means wiring being connected such that said sign warning lights are continuously energized by said battery through said circuit interrupter and independent of the electrical position of said first and second limit switches and electrically flash when and so long as said control switch is in its said deploy position.

4,339,745
OPTICAL CHARACTER RECOGNITION

William D. Barber, Jonesville; Thomas M. Cipolla, Ballston Lake, and Joseph L. Mundy, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 14, 1980, Ser. No. 149,841
Int. Cl.³ G06K *9/28*
U.S. Cl. 340—146.3 F **16 Claims**



1. A method of generating image data for the automatic recognition of marks on metallic and other specular surfaces which have varying conditions of surface roughness and reflectivity comprising the steps of:

producing marks on such a surface of an object that have random fluctuations of height and good light scattering properties as compared to background regions;

scanning the marked surface with an optical system that applies light approximately normal to the surface and limits the light sensed by an optical detector array to that reflected normal to the surface and within a predetermined solid acceptance angle, each detector generating an electrical signal corresponding to light intensity; and

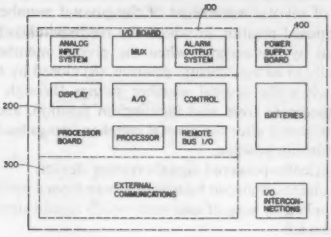
preprocessing said detector signals to yield high contrast image data in which background signal levels are relatively flat and significantly different than mark signal levels;

wherein said detector signal are each preprocessed by developing a histogram of light intensities, determining whether the histogram is bimodal of unimodal, selecting a background light value between histogram peaks when the histogram is bimodal and a threshold background light value at the edge of the histogram when the histogram is unimodal, and thresholding said detector signal with the background value to thereby produce image data in which the background level is set to a constant.

4,339,746
ALARM CONTROL CENTER

Edward M. Ulicki, Upper Saddle River, and Gabor Schlisser, Tenafly, both of N.J., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1980, Ser. No. 206,928
Int. Cl.³ G08B *19/00*
U.S. Cl. 340—518 **8 Claims**



1. An alarm control center for interfacing with an array of input sensor loops, each of said loops having a plurality of sensors each arranged to vary in resistance indicating whether, for example, windows and doors are open, or the presence of smoke or fire, and an array of alarm outputs including, for example, sirens, automatic telephone dialers, local audio buzzers and displays, said alarm control center comprising:

means for interchangeably preassigning alarm parameters for each of said input sensor loops;

means for interchangeably preassigning alarm outputs for each of said input sensor loops;

means for sequentially scanning said array of input sensor loops;

means for conditioning the signals received from each of the scanned sensor loops;

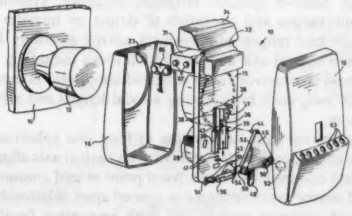
means for comparing the signal from each particular scanned input sensor loop with the respective preassigned alarm parameters; and

means for activating the appropriate alarm outputs when said comparing means indicates an alarm condition in the signal corresponding to the respective input sensor loop.

4,339,747
BURGLAR ALARM

Richard C. Maybee, 2157 Deyncourt Dr., Burlington, Ontario L7R 1W2, Canada

Filed Nov. 13, 1980, Ser. No. 206,379
Claims priority, application Canada, Nov. 13, 1979, 339749
Int. Cl.³ G08B *13/08*
U.S. Cl. 340—547 **7 Claims**



1. An alarm comprising:

a mounting base,

means for affixing the mounting base to an item whose movement is to be signalled by the alarm,

a magnetic reed switch constituting a first element,

a magnet constituting a second element,
one of said elements being mounted on a pivotal member capable of pivoting with respect to the mounting base, the other of said elements being capable of retaining a given position with respect to the mounting base,
means for adjusting the relative distance from the pivot location for the pivotal member to the location of said other of said elements, between a separated position in which the reed switch is unaffected by the magnet regardless of pivotal movement of the pivotal member, and a juxtaposed position in which the reed switch is (a) unaffected by the magnet when the pivotal member hangs initially in an equilibrium position, (b) closed by the magnet when the pivotal member swings through a given displacement from said equilibrium position, and (c) remains closed after the pivotal member swings back to said equilibrium position,
an electrically-powered signal-creating device,
and an electrical circuit by which power from a power souce is supplied by way of said reed switch to said signal-creating device.

4,339,748

MULTIPLE RANGE PASSIVE INFRARED DETECTION SYSTEM

John K. Guscott, Lynnfield, and Robert Powers, Norwell, both of Mass., assignors to American District Telegraph Company, New York, N.Y.

Filed Apr. 8, 1980, Ser. No. 138,311
Int. Cl.[3] G02B *5/10*; G08B *13/18*
U.S. Cl. 340—555 **17 Claims**

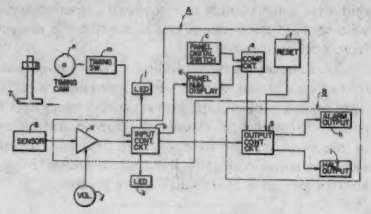
1. A passive infrared intrusion detection system having multiple ranges and operative to detect an intruder moving through said ranges comprising a mirror assembly having a common optical axis and a common focus including:
at least two mirror ranks disposed about said common optical axis, each rank having a focal length and a reflecting area;
each mirror rank comprising at least one spherical mirror segment, each segment having an optical axis aligned with said common axis and a focal point at said common focus;
said mirror ranks arranged in spaced apart relationship along said common optical axis with respective focal lengths and reflecting areas increasing with increasing distance from said common focus for providing said multiple ranges with substantially uniform detection sensitivity for all said ranges; and
a detector disposed at said common focus operative to provide electrical signals indicative of intruder detection.

4,339,749

ABNORMAL CONDITION SENSING MONITOR SYSTEM FOR USE WITH MACHINE TOOLS

Shoichi Yamada, Moriguchi, Japan, assignor to Toyo Tokushu Kiki Co., Ltd., Osaka, Japan

Filed Jul. 2, 1980, Ser. No. 165,442
Claims priority, application Japan, Jul. 3, 1979, 54-84654
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—680 **7 Claims**



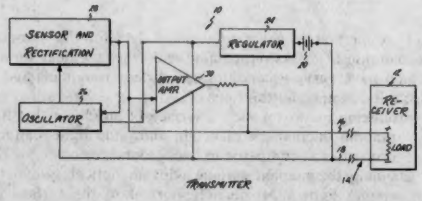
1. A method of sensing an abnormal condition of a machine tool, said machine tool including a movable element reciprocatingly movable between a first and a second position and a stationary element confronting said movable element with a certain spacing therebetween, comprising the steps of: sensing a displacement of said movable element from said first position; providing an output indicative of the displacement thereof; processing by subjecting to comparison the output provided as a result of sensing with a value to selectively generate an alarm signal and a halt signal; and indicating the abnormal condition indicative of the displacement of said movable element by generation of said alarm signal.

4,339,750

LOW POWER TRANSMITTER

Moises A. Delacruz, Cottage Grove, Minn., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Aug. 20, 1980, Ser. No. 179,711
Int. Cl.[3] G08C *19/10*
U.S. Cl. 340—870.37 **9 Claims**



1. A low power transmitter having power supply means for providing the transmitter with power,
voltage regulator means coupled to the power supply means for regulating the voltage provided for the transmitter,
oscillator means coupled to the regulator means for providing a time varying voltage as a function of the voltage of the regulator means,
sensor means coupled to the oscillator means for receiving the time varying voltage therefrom and for excitation thereof, said sensor means being responsive to changes in a parameter to be sensed and affecting the time varying signal responsive to the change in the parameter, said sensor means further including rectifier means for rectifying the affected time varying signal to provide a D.C. signal as a function of the parameter to be measured,

driver means coupled to the sensor means to drive the oscillator responsive to the D.C. signal,

low power consumption amplifier means coupled to receive the D.C. signal and to provide a zero based D.C. voltage output signal representative of the parameter to be measured along two wires,

said voltage regulator means further comprising voltage reference means for establlishing a stable reference voltage,

error amplifier means coupled to the reference voltage means to provide an error signal as a function of the voltage from the reference voltage means and the voltage from the power supply means, and

pass element means coupled to receive the error signal and coupled to the power supply to regulate transmitter voltage at a level not substantially greater than ten volts,

the voltage regulator means, oscillator means, sensor means, driver means and low power consumption amplifier means providing such D.C. voltage output signal when the power supply means is limited to not substantially greater than ten volts.

4,339,751

MARINE RADAR INCLUDING ANTICOLLISION UNIT

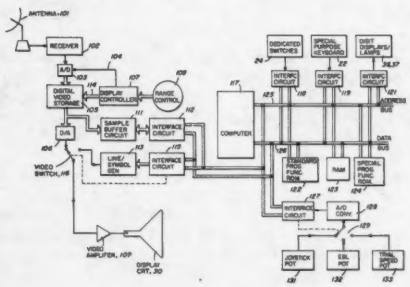
William M. Pease, Weston, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 899,952, Apr. 25, 1978, Pat. No. 4,205,313. This application Aug. 27, 1980, Ser. No. 70,235

The portion of the term of this patent subsequent to May 27, 1997, has been disclaimed.

Int. Cl.[3] G01S *7/44*

U.S. Cl. 343—5 DP **5 Claims**



1. In combination:

means for providing digital samples of radar echo signals, said digital samples being taken at intervals of time determined by a radar range setting;

means for storing said digital samples of said radar echo signals;

means for sequentially reading said samples out of said storing means at a rate constant over a plurality of radar range settings;

means for displaying in the PPI mode information derived from said samples;

a digital computer coupled to said displaying means, said digital computer operating upon at least portions of said samples for producing signals representing data to be displayed;

a first set of switches, each of said switches of said first set corresponding to a predetermined set of instructions for performing computer operations, at least some of said operations being performed by said computer for producing display data derived from said samples; and

a second set of numerically identified switches, activation of said switches of said second set of switches in a predetermined sequence corresponding to a predetermined set of instructions for performing a computer operation, said operation performed by said computer for producing display data derived from said samples.

4,339,752

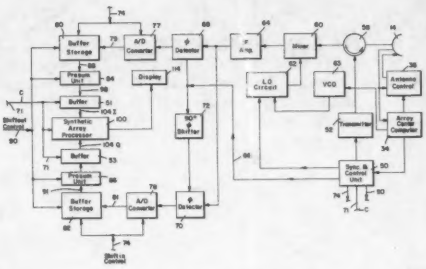
SYNTHETIC ARRAY PROCESSOR

Frederick C. Williams, Topanga, and William W. Clements, Los Angeles, both of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Jun. 15, 1971, Ser. No. 154,238

Int. Cl.[3] G01S *13/90*

U.S. Cl. 343—5 CM **21 Claims**



17. The method of producing high resolution synthetic array data comprising the steps of:

transmitting and receiving energy to provide radar data during N subarray flight path segments;

adjusting the relative phase and time delay of the radar data received during each subarray flight path segment, and summing the resultant signals associated with the same resolution cell to provide N consecutive sets of imagery data with each set corresponding to the same group of substantially rectangularly oriented resolution cells but different subarray flight path segments; and

filtering the data of corresponding resolution cells from each of said N sets of imagery data to produce a subset of high resolution synthetic array imagery data for each resolution cell.

4,339,753

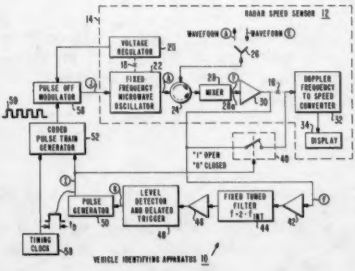
VEHICLE IDENTIFICATION SYSTEM

Daniel D. Mawhinney, Livingston, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 19, 1979, Ser. No. 105,124

Int. Cl.[3] G01S *13/78, 13/58*

U.S. Cl. 343—6.5 SS **5 Claims**



1. A combination vehicle speed sensor, mounted on a moving vehicle, and identification system, comprising in combination:

said speed sensor including means for transmitting a continu-

ous wave RF signal toward an RF reflecting surface to be thereby reflected back to said vehicle;

said sensor including means responsive to said reflected signal and to said transmitted signal for producing a signal indicative of speed of said vehicle;

means in spaced relationship with said vehicle and responsive to said continuous wave RF signal for transmitting an interrogating signal to said vehicle;

said speed sensor including means responsive to said interrogating signal for temporarily interrupting the transmission of said continuous wave signal and for transmitting a coded signal uniquely identifying said vehicle.

4,339,754

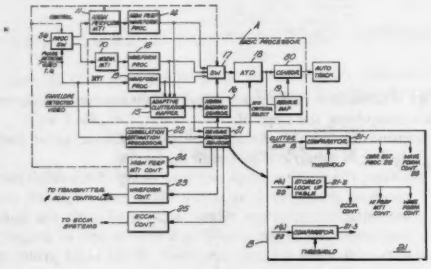
SPATIALLY ADAPTIVE MOVING TARGET INDICATOR SYSTEM FOR RADAR EQUIPMENT

David E. Hammers, Los Angeles, and John M. Milan, Canoga Park, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 26, 1978, Ser. No. 972,736

Int. Cl.³ G01S *13/52*

U.S. Cl. 343—7.7 **14 Claims**



1. In a radar system of the type having a first moving target indicator filter means for suppressing ground clutter returns and a background sensor means for enabling said first filter means in regions of clutter, the improvement comprising: a severe background sensor means for detecting regions of clutter returns not suppressed by said first filter means and for generating a control signal and response thereto; correlation processor means, responsive to said control signal, for calculating the correlation of clutter returns received by said radar system; a second moving target indicator filter means for suppressing sky clutter returns; and means, responsive to the output of said processor means, for enabling said second filter means in those regions wherein the clutter returns exhibit a correlation greater than a first threshold.

4,339,755

PASSIVE-TYPE RANGE DETERMINING SYSTEM USING SCANNING RECEIVING DEVICES

James M. Wright, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Mar. 3, 1980, Ser. No. 126,456

Int. Cl.³ G01S *5/04*

U.S. Cl. 343—112 D **10 Claims**

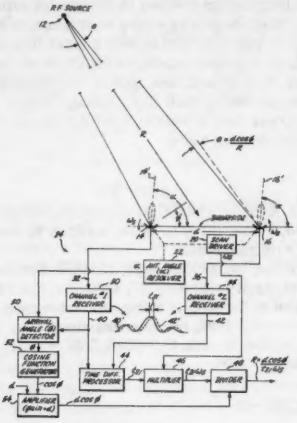
1. An apparatus for determining the range of a source of electromagnetic transmission from a monitoring location, comprising:

first and second directional receiving means each having a principal receiving axis for receiving the transmission when said axes are aligned with the source, said first and second receiving means being arrayed at relatively spaced-apart positions separated by a distance d at said monitoring location, and means for mounting said first and second receiving means for scanning;

scan driver means for causing each of said first and second receiving means to scan at a predetermined scan rate ω_s and in phase synchronization so that any instant both said receiving means are oriented at the same angle α with respect to the broadside of said receiving means, and so that the principal receiving axes of said first and second receiving means are parallel;

first and second channel electrical means connected to said first and second receiving means, respectively, for developing early and late arriving signals representing the receipt by said first and second receiving means of the transmission;

means for measuring a time differential t_{21} between early and late arriving signals developed by said first and second



channel electrical means, and for producing a signal representing said time differential t_{21};

angle of arrival measurement means for measuring an angle ϕ at which the transmission arives at said monitoring location relative to said receiving means, and for producing a signal representing said angle ϕ; and,

range determining circuit means responsive to said signals representing said time differential t_{21} and said angle of arrival ϕ, for producing an output signal proportional to the range as a function of said signals representing said time differential t_{21}, said angle of arrival ϕ, said separation distance d and said scan rate ω_s.

4,339,756

ANTENNA EQUIPMENT OF UHF TUNER

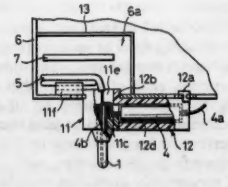
Kohei Oyama, Soma, and Eiji Nishizawa, Kakuda, both of Japan, assignors to Alps Electric Co. Ltd., Tokyo, Japan

Filed Mar. 10, 1981, Ser. No. 242,366

Claims priority, application Japan, Nov. 3, 1980, 55-30484; Nov. 4, 1980, 55-48848[U]

Int. Cl.³ H01Q *1/24*

U.S. Cl. 343—702 **5 Claims**



1. An antenna equipment for a UHF tuner, comprising:

a supporting member made from an insulator and adapted to

be fixed to a wall of a chassis of the UHF tuner, two antenna pins fastened to said supporting member, each of said two antenna pins having its one end protruded outwardly of said supporting member and its base end part exposed in the chassis side of said UHF tuner;

an antenna coil arranged inside said UHF tuner and electrically coupled with the base end parts of said antenna pins through an opening formed in said UHF tuner;

a fixed resistor arranged on the outer wall of said chassis of said UHF tuner, one of the two leads of said resistor being electrically connected to either of said two antenna pins and the other of said two leads being electrically connected to said chassis of said UHF tuner; and

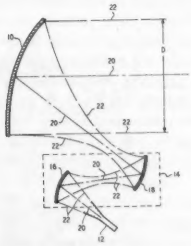
a cover member made from an insulator and adapted to be fixed to said wall of said chassis of said UHF tuner and to be mechanically coupled with said supporting member, said cover member covering said fixed resistor outside said chassis of said UHF tuner.

4,339,757

BROADBAND ASTIGMATIC FEED ARRANGEMENT FOR AN ANTENNA

Ta-Shing Chu, Lincroft, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 24, 1980, Ser. No. 209,943
Int. Cl.³ H01Q *19/13*
U.S. Cl. 343—781 P **6 Claims**



1. A broadband antenna system capable of correcting for astigmatism in a beam which is either radiated or received by the antenna system, the antenna comprising:

a main focusing reflector (**10**) arrangement;

a feed (**12**) comprising a predetermined aperture distribution and disposed to permit either one of the radiation of the beam in a particular direction and the reception of the beam from a particular direction along a feed axis of the antenna system; and

astigmatic correction means (**14**) disposed to perform beam matching between the feed and the main focusing reflector arrangement for either the radiation or reception of the beam

characterized in that

the astigmatic correction means comprises:

a first reflector (**16**) disposed between the feed and the main focusing reflector arrangement along the feed axis of the antenna system for said beam, the first reflector comprising different focal lengths in each of two orthogonal planes equal to $1/f_1 - 1/L'_1 + 1/L'_i$ and a radius of curvature according to the relationships

$$R_{\perp} = 2f_1(\perp)\cos\theta_i, \text{ and } R_{\parallel} = \frac{2f_1(\parallel)}{\cos\theta_i}$$

where f_1 is the focal length in each of the two orthogonal planes, L'_1 is the distance between the center of the first reflector and the center of the feed aperture distribution, L'_1 is the distance between the center of the first reflector and the center of an intermediate image of the feed formed by the first reflector, $R_{\parallel}$ is the radius of curvature of said first reflector in the plane of incidence of said beam, $R_{\perp}$ is the radius of curvature of said first reflector perpendicular to the plane of incidence, and Θ_i is the angle of incidence of the beam; and

a second reflector (**18**) disposed between the first reflector and the main focusing reflector arrangement along the feed axis of the antenna system for said beam, the second reflector comprising different focal lengths in each of two orthogonal planes equal to $1/f_2 = 1/L_i + 1/L_i$ and a radius of curvature according to the relationships

$$R_{\perp} = 2f_2(\perp)\cos\theta_i, \text{ and } R_{\parallel} = \frac{2f_2(\parallel)}{\cos\theta_i}$$

where f_2 is the focal length in each of the two orthogonal planes, L_1 is the distance from the center of said second reflector to the center of a next reflector along the feed axis of the antenna system forming a part of the main focusing reflector arrangement, and L_i is the distance between the center of the second reflector and said intermediate image of the feed formed by the first reflector, the first and second reflectors being spaced apart a distance, l, as determined from the relationship

$$l = \frac{L'_1}{h}\left[\frac{L_1}{r_1} - 1\right] - hL_1\left(1 + \frac{L'_1}{r'_1}\right)$$

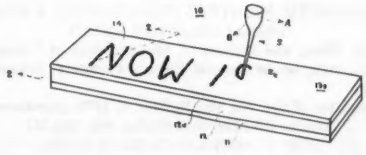
where $h = L'_1/L'_i L_i/L_1$, r'_1 is the radius of curvature of the phase distribution at the aperture of the feed, and r_1 is the radius of curvature of the phase distribution at a final image of the feed formed at said next reflector along the feed axis of the antenna system forming a part of the main focusing reflector arrangement.

4,339,758

ELECTROSENSITIVE RECORDING

Sushil Bhatia, Framingham, and Ralph J. Shuman, Needham, both of Mass., assignors to Dennison Manufacturing Company, Framingham, Mass.

Filed May 15, 1981, Ser. No. 263,964
Int. Cl.³ G01D *15/24, 9/00*
U.S. Cl. 346—1.1 **33 Claims**



30. The method of electrosensitive recording which comprises applying an electrically actuated implement to a metallic surface and penetrating the surface electrically to selectively expose portions of an underlying contrast layer, which includes crystalline silicone dioxide therein.

4,339,759

COLLECTOR CONTROLLER FOR CHROMATOGRAPH

Kanji Nakatsu, Kingston, Canada, assignor to Queen's University at Kingston, Kingston, Canada

Filed Nov. 3, 1980, Ser. No. 203,168
Int. Cl.³ G01D *9/00*
U.S. Cl. 346—33 R **7 Claims**

1. In a liquid chromatographic system which includes a strip chart recorder having a pen holder slidable on a guide rail and

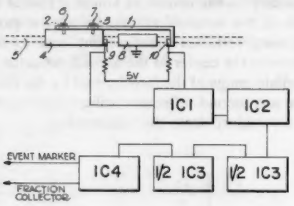
a fraction collector, the improvement comprising an electro-mechanical controller for said collector, comprising:

(a) sensor means including:

(i) electrically conductive slider means slidably mounted on and electrically insulated from said rail;

(ii) longitudinally extending bar means mounted on said pen holder and electrically insulated therefrom adapted to draw said slider means along said guide rail in response to movement in one direction of said pen holder, including first electrical contact means to contact said slider means and thereby generate a first output signal;

(iii) second electrical contact means on said pen holder adapted to electrically contact and push said slider along said guide rail in response to movement in the other direction of said pen holder, and thereby generate a second output signal;



(b) integrated circuit timer means arranged to receive said first and second output signals and provide a trigger signal and reset signal in response thereto;

(c) one-shot integrated circuit means arranged to provide a third output signal on receipt of said trigger signal and to reset on receipt of said reset signal;

(d) dual timer integrated circuit means comprising a free running timer which fires at selected time intervals and a delay timer, arranged to receive said third output signal, fire said free running timer and produce a fourth output signal which initiates said delay timer; and

(e) one-shot integrated circuit means arranged to receive a fifth output signal from said delay timer and provide an event marker output signal and a fraction collector movement signal.

4,339,760

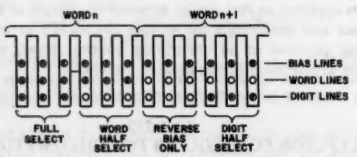
MAGNETIC PRINTING HEAD HAVING A HIGH SIGNAL-TO-NOISE RATIO

Jish M. Wang, and Richard O. McCary, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 91,528, Nov. 5, 1979, abandoned. This application Mar. 6, 1981, Ser. No. 241,261

Int. Cl.³ G01D *15/12*; G03G *19/00*

U.S. Cl. 346—74.5 **10 Claims**



1. A magnetic printing head, having a high signal-to-noise ratio, for writing information on a magnetic recording medium moving relative to said head, said head comprising:

an elongate magnetic member having along the length thereof a plurality of regularly spaced projections, said member being composed of material having a high permeability;

means to produce a full select signal magnetic field between the tips of selected adjacent pairs of projections, said means being operated by energizing a pair of electrical conductors disposed between said selected projections, each of said conductors producing a half select signal magnetic field, the half-select magnetic fields combining to produce said full select signal magnetic field; and

bias means operating to produce a bias magnetic field at least between said selected pairs of projections, said bias magnetic field being opposed to said full select and half select signal magnetic fields so as to increase the ratio of the resultant full select magnetic field strength to the resultant half-select magnetic field strength.

4,339,761

COMPACT PLUNGER PUMP

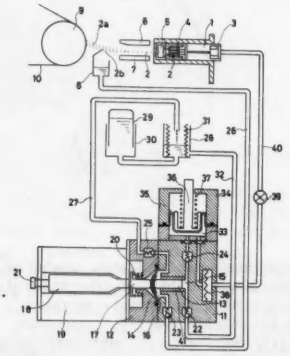
Masafumi Matsumoto, Asukamura, and Matahira Kotani, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 97,389, Nov. 26, 1979, Pat. No. 4,263,602. This application Mar. 26, 1980, Ser. No. 134,317

Claims priority, application Japan, Mar. 22, 1979, 54-37764[U]

Int. Cl.³ G01D *15/18*; F16J *10/00*

U.S. Cl. 346—75 **16 Claims**



1. A constant flow rate plunger pump comprising:

a cylinder block including a cylinder portion;

a bush secured to said cylinder portion of said cylinder block;

a piston slidably disposed in said bush;

a first pressure chamber defined by said cylinder block and one end of said piston;

a resilient member secured to the other end of said piston;

a second pressure chamber defined by said cylinder block, said piston and said resilient member;

drive means for reciprocating said piston within said bush;

a first inlet valve communicating with said first pressure chamber for introducing a liquid into said first pressure chamber when said piston is driven to travel in a predetermined direction;

a first outlet valve communicating with said first pressure chamber for developing the liquid from said first pressure chamber when said piston is driven to travel in a direction counter to said predetermined direction;

a second inlet valve communicating with said second pressure chamber for introducing a liquid into said second pressure chamber when said piston is driven to travel in said predetermined direction; and

a second outlet valve communicating with said second pressure chamber for developing the liquid from said second

pressure chamber when said piston is driven to travel in a direction counter to said predetermined direction.

4,339,762

LIQUID JET RECORDING METHOD

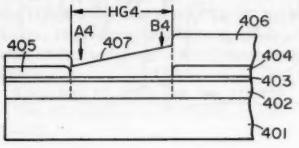
Yoshiaki Shirato, Yokohama; Yasushi Takatori, Sagamihara; Toshitami Hara, Tokyo; Yukuo Nishimura, Sagamihara, and Michiko Takahashi, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 31, 1980, Ser. No. 136,179

Claims priority, application Japan, Apr. 2, 1979, 54-39529

Int. Cl.³ G01D *15/18*

U.S. Cl. 346—140 R **9 Claims**



1. A liquid jet recording method capable of recording gradation which comprises:

(a) filling a conduit with a liquid, said conduit having, at one end, an orifice for ejecting and projecting a liquid droplet in a predetermined direction, said conduit being provided with a heat actuating portion for generating a force for ejecting the liquid droplet by applying heat energy to the liquid to cause an abrupt state change, wherein the heat actuating portion includes an electrothermal transducer having a heat generating portion of such a structure that the degree of heat supply is different from position to position on the heating surface, and

(b) controlling the strength of an input electric signal corresponding to the gradation of an image to be recorded, thereby controlling the distribution of the degree of heat supply at the heating surface.

4,339,763

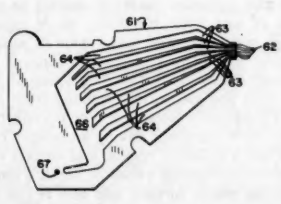
APPARATUS FOR RECORDING WITH WRITING FLUIDS AND DROP PROJECTION MEANS THEREFOR

Edmond L. Kyser, and Stephan B. Sears, both of Portola Valley, Calif., assignors to System Industries, Inc., Milpitas, Calif.

Continuation of Ser. No. 815,502, Jul. 14, 1977, abandoned, which is a continuation-in-part of Ser. No. 489,985, Jul. 19, 1974, Pat. No. 4,189,734, which is a continuation-in-part of Ser. No. 50,445, Jun. 29, 1970, Pat. No. 3,946,398. This application Nov. 26, 1980, Ser. No. 210,799

Int. Cl.³ G01D *15/16*

U.S. Cl. 346—140 R **4 Claims**



1. A printing ink supply device for ink jet printers comprising:

at least two plates located opposite to each other and interconnected,

said first plate being provided with pumping means, said pumping means constituting a piezoelectric crystal and an operatively connected diaphragm,

a pump chamber for said pumping means being constituted of a space formed between the pumping means and the second plate,

a channel formed in said second plate by means of an elongated shallow groove in a surface facing said first plate together with an adjacent surface of said first plate,

a capillary nozzle,

said space communicating with said capillary nozzle by means of said channel.

4,339,764

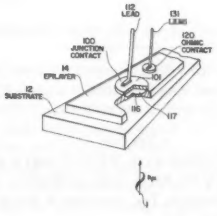
PbS_xSe_{1-x} SEMICONDUCTOR

Richard B. Schoolar, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Division of Ser. No. 801,431, May 27, 1977, Pat. No. 4,154,631. This application Mar. 26, 1979, Ser. No. 23,983

Int. Cl.³ H01L *27/14*

U.S. Cl. 357—30 **11 Claims**



1. A semiconductor device comprising:

an insulating crystalline substrate of an alkali halide; and

an epitaxial layer of PbS_xSe_{1-x}, having $0 \leqq x \leqq 1$ and a minority charge-carrier lifetime greater then one nanosecond at 26°±5° Celsius, on said substrate.

4,339,765

TRANSISTOR DEVICE

Junichi Nakamura; Seiji Hata, both of Oita, and Iwao Yamasaki, Kitakayushu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 4, 1980, Ser. No. 156,370

Claims priority, application Japan, Jun. 12, 1979, 54-73874

Int. Cl.³ H01L *29/06*

U.S. Cl. 357—36 **3 Claims**

1. A transistor device comprising:

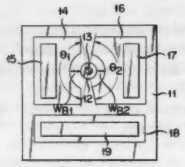
a semiconductor substrate of one conductivity type;

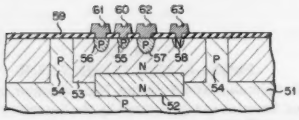
a base region formed on a main surface of said substrate;

a first region formed on said main surface in said base region, said first region being of a conductivity type opposite to that of said substrate;

at least two second regions formed on said main surface in said base region separately from said first region, said second regions being of a conductivity type opposite to that of said substrate, the diffusion depth of at least one of said second regions being greater than the diffusion depth of at least another of said second regions, and the effective

plane distance between said at least one of said second regions and said first region being different from the effec-





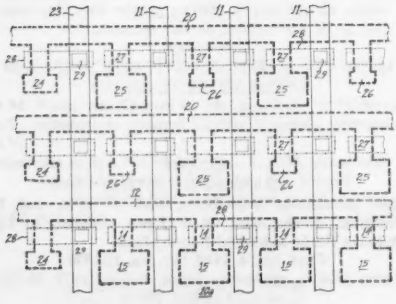
tive plane distance between the said another of said second regions and the first region.

4,339,766

DUMMY COLUMNS FOR REDUCING PATTERN SENSITIVITY IN MOS/LSI DYNAMIC RAM

G. R. Mohan Rao, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Oct. 11, 1979, Ser. No. 83,927
Int. Cl.[3] H01L *27/02, 29/78;* **G11C** *11/24*
U.S. Cl. 357—41 **5 Claims**



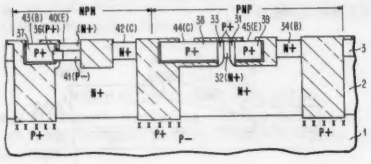
1. A semiconductor memory device comprising an array of rows and columns of memory cells in a face of a semiconductor body, means for accessing data in said array, peripheral circuitry in said face spaced from the array, and a pair of dummy columns positioned in said face at each end of the array between the array and said circuitry to prevent diffusion of minority carriers from said circuitry to the memory, the dummy columns comprising a plurality of memory cells similar to that in said array of memory cells, said means for accessing not being connected to said dummy columns, each dummy column comprising a plurality of one-transistor cells having alternating large and small capacitors.

4,339,767

HIGH PERFORMANCE PNP AND NPN TRANSISTOR STRUCTURE

Cheng T. Horng, San Jose, Calif.; Richard R. Konian, Poughkeepsie, N.Y.; Robert O. Schwenker, San Jose, Calif., and Armin W. Wieder, Starnberg, Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 5, 1980, Ser. No. 146,921
Int. Cl.[3] H01L *27/02, 29/04*
U.S. Cl. 357—44 **3 Claims**



1. In an integrated circuit structure including a vertical NPN transistor and a lateral PNP transistor, said NPN transistor being electrically isolated from said PNP transistor, said structure including a monolithic crystalline silicon substrate having a planar surface, a thin epitaxial layer contained on said planar surface of said substrate and monolithically integral with said monolithic crystalline silicon substrate, said thin epitaxial layer having recessed oxide isolation regions and P type polysilicon regions formed therein, said integrated circuit structure being characterized as follows:

a first electrically isolated P type polysilicon region formed in said epitaxial layer and having at least one perpendicular side wall, said first electrically isolated P type polysilicon region extending laterally in said epitaxial layer in a first direction;

a second electrically isolated P type polysilicon region formed in said epitaxial layer and having at least one perpendicular side wall, said second electrically isolated P type polysilicon region extending laterally in said epitaxial layer in a second direction opposite to said first direction;

said side wall of said second P type polysilicon region being oppositely disposed and spaced from said side wall of said first P type polysilicon region;

said spacing between said perpendicular side walls of said first and second P type polysilicon regions providing a region of said epitaxial layer having a width in the order of 6000 to 8000 Å;

a lateral PNP transistor formed in said in the order of 6000 to 8000 A wide region of said epitaxial layer, said lateral PNP transistor having an emitter region, a base region and a collector region, where said first P type polysilicon region provides electrical contact to said emitter region of said lateral PNP transistor and said second P type polysilicon region provides electrical contact to said collector region of said PNP transistor, an N type base reach through region for said base region of said lateral PNP transistor, said N type base reach through region being contained essentially within said epitaxial layer and remote from and electrically isolated from said first and second electrically isolated P type polysilicon regions;

a vertical NPN transistor having an emitter region, a base region and a collector region, said emitter region of said NPN transistor having a shallow depth, a limited area and an exposed planar surface, said base region of said NPN transistor having a shallow depth, said base region of said NPN transistor having a limited area essentially equal in area to said limited area of said emitter region of said NPN transistor, said base region of said NPN transistor providing an essentially planar emitter-base junction, said emitter-base junction having an area corresponding essentially to said limited area of said emitter and base regions of said

NPN transistor, said base region having a contact region laterally displaced from said emitter-base junction;

a third electrically isolated P type polysilicon region formed in said epitaxial layer, said third polysilicon region laterally extending in said second direction from said base region of said NPN transistor, said third polysilicon region physically and electrically contacting said laterally displaced base contact region of said NPN transistor; and

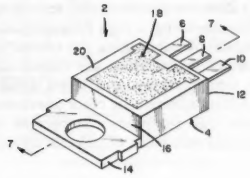
an N type collector reach through region for said NPN transistor, said N type collector reach through region being contained within said epitaxial layer remote from and electrically isolated from said first, second and third electrically isolated P type polysilicon regions.

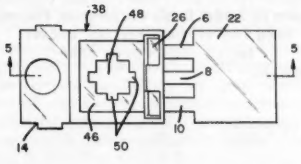
4,339,768

TRANSISTORS AND MANUFACTURE THEREOF

Joseph R. Keller, Harrisburg, and Billy E. Olsson, New Cumberland, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 18, 1980, Ser. No. 113,159
Int. Cl.³ H01L *23/28, 23/48, 23/02*
U.S. Cl. 357—72 **7 Claims**





1. In a stamped and formed lead frame of the type used for mounting an IC chip, said lead frame being of the type comprising carrier means, a plurality of leads extending from edge portions of said carrier means in side-by-side coplanar relationship, a chip mounting plate on the end of one of said leads, said chip mounting plate having a chip supporting surface and a bottom surface, the remaining leads extending cantilever fashion from said carrier means and having free ends proximate to said chip supporting surface, contact surfaces on said free ends, the improvement to said lead frame comprising:

a housing comprising molded plastic material molded onto said lead frame in partially encapsulating relationship to said chip mounting plate and said free ends of said remaining leads, said molded plastic material having a well therein extending towards said contact surfaces and towards said chip receiving surface, said bottom surface being exposed, said contact surfaces being in said well and being exposed, said molded plastic material including a floor portion at the inner end of said well, said floor portion extending over a major portion of said chip receiving surface, a chip receiving cavity in said floor portion extending to said chip receiving surface so that said chip receiving surface is exposed at the inner end of said cavity, said cavity having cavity walls which conform to the edges of said chip whereby,

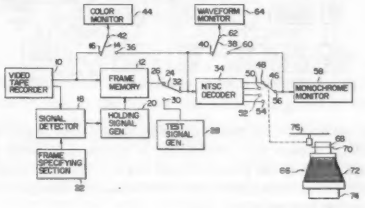
upon placement of a chip in said cavity, said chip is precisely confined in said cavity against said chip receiving surface and is precisely located relative to said contact surfaces.

4,339,769

PHOTOGRAPHY APPARATUS FOR TELEVISION PICTURE

Toshiji Fujita, Niiza; Chihiko Yamada, Tokyo; Takeo Terashima, Shigi, and Masaki Nojima, Urawa, all of Japan, assignors to Toppan Printing Co., Ltd., Tokyo, Japan

Filed Jun. 16, 1980, Ser. No. 159,846
Claims priority, application Japan, Jun. 25, 1979, 54-79824; Jul. 2, 1979, 54-83750; Jul. 31, 1979, 54-97685; Sep. 20, 1979, 54-121476; Apr. 11, 1980, 55-48410
Int. Cl.³ H04N *5/78, 5/84, 9/02*
U.S. Cl. 358—6 **15 Claims**



1. A photography apparatus for television picture comprising:

video tape recorder means loaded with a video tape which is recorded with a television signal and a frame specifying signal recorded on a location corresponding to a predetermined frame component signal of the television signal, said means being adapted to detect said frame specifying signal during reproduction of the television signal;

storing means connected to said video tape recorder means for storing the predetermined frame component signal of a reproduction output of the video tape recorder, when said video tape recorder means detects a frame specifying signal;

decoder means connected to said storage means for causing the frame component signal stored in said storing means to be resolved into three primary color signals;

monochrome television monitor means for producing a picture for each primary color signal which is generated from said decoder means; and

photographing means having a film, lens and diaphragm and adapted to cause a picture formed by said monochrome television monitor means to be photographed in an out-of-focus state, the configuration of the diaphragm being longer in a first direction than in a second direction extending along the horizontal scanning line of said monochrome television monitor means, said first direction being orthogonal to said second direction, and the degree of the out-of-focus being such that a picture is defined within a depth of field when viewed in said second direction and outside the depth of field when viewed in said first direction.

4,339,770

SYNCHRONIZING SYSTEM WITH CHROMA PARITY DETECTION

Robert C. Dennison, Westmont, and James M. Walter, Columbus, both of N.J., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 94,281, Nov. 19, 1979, abandoned. This application Oct. 27, 1980, Ser. No. 200,905
Int. Cl.³ H04N *9/46*
U.S. Cl. 358—19 **21 Claims**

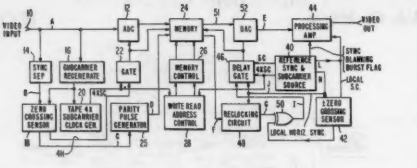
1. A television video delay arrangement, adapted to delaying color television signals from a source of television composite

signals including synchronizing timing signals, chrominance information and burst signals, comprising:

input clock generator means coupled to the source of color television signals for generating input clock signals at a rate related to the burst signals;

memory means;

gating means for gating said input clock signals to said memory means beginning at the time of the first one of a predetermined plurality of phases of said burst following a predetermined time after each synchronizing timing signal for commencing writing into memory, which creates an ambiguity in the phase of said burst relative to the chrominance information which may result in color distortion;



burst phase sensing means coupled to said source and to said gating means for producing a phase indication signal indicative of the phase of said burst relative to said chrominance information at the time of said commencement of writing into memory; and

reading means for reading said chrominance information out of said memory, said reading means comprising phase correction means coupled to said phase sensing means for correcting the phase of said chrominance information read out of said memory relative to a local subcarrier to match the phase of said chrominance information relative to said burst under the control of said phase indication signal for correcting said color distortion.

4,339,771

SOLID-STATE COLOR IMAGING APPARATUS HAVING AN EXCELLENT RESOLUTION

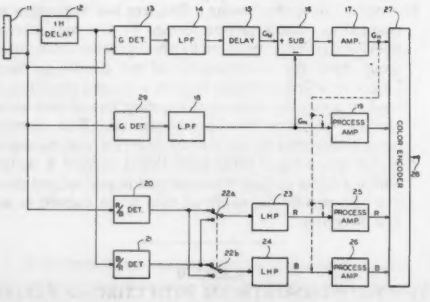
Masanobu Morishita, and Takanori Tanaka, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,394

Claims priority, application Japan, Aug. 31, 1979, 54-111371

Int. Cl.[3] H04N *9/07*

U.S. Cl. 358—41 **22 Claims**



1. A solid-state color imaging apparatus comprising a solid-state area image sensor means having picture elements in rows and columns, said sensor means including a first group of picture elements having a first spectral sensitivity characteristic which requires a visually high resolution at the time when an image is reproduced responsive to signals picked up by said sensor means, second and third groups of picture elements having a second and third spectral sensitivity characteristics, respectively, said first group of picture elements being arrayed at alternate picture element positions in every row and at alternate scanning line positions in every column, and said second and third group of picture elements, respectively, being arrayed in alternative rows; delaying means for delaying the output signal of said solid-state area image sensor means by a period corresponding to the scanning of one scanning line, first detector circuit means for picking up output signals of said first group of picture elements from among the output signal of said solid-state area image sensor means, second detector circuit means for picking up alternately output signals of said second group of picture elements and output signals of said third group of picture elements from the output signal of said solid-state area image sensor means, third detector circuit means for picking up alternatively output signals of said second group of picture elements and output signals of said third group of picture elements, from the output signal of said delaying means, the pick-up signals from said second and third detector circuit means being different from each other, fourth detector circuit means for picking up output signals of said first group of picture elements alternately from the output signal of said solid-state area image sensor means and from the output signal of said delaying means for the successive picture element positions, first signal synthesizer means for synthesizing low frequency component of a luminance signal and two kinds of color difference signals from the output signals of said first, second and third detector circuit means, second signal synthesizer means for synthesizing a high frequency component of the luminance signal by subtracting the output signal of said first detector circuit means from the output signal of said fourth detector circuit means, and third signal synthesizer means for synthesizing a composite color television signal from said low and said high frequency components of said luminance signal and said two kinds of color difference signals.

4,339,772

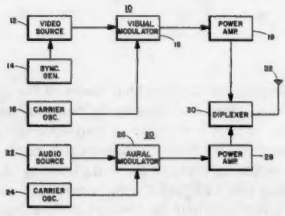
TV SOUND TRANSMISSION SYSTEM

Carl Eilers, River Forest, and Pieter Fockens, Glenview, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Oct. 14, 1980, Ser. No. 196,491

Int. Cl.[3] H04N *5/40, 5/44*

U.S. Cl. 358—144 **40 Claims**



1. In a television signal transmitter of the type having a signal source defining a horizontal scanning line frequency and means for generating an audio transmission signal comprising a main carrier signal frequency modulated by a composite modulation function, the improved apparatus for developing said composite modulation function comprising:

means for developing first and second stereophonically related audio signals;

means for developing a third audio signal;

means for developing first and second subcarrier signals having frequencies equal to two and four times said horizontal scanning line frequency respectively;

means for developing a first modulation function component comprising the sum of said stereophonically related audio signals;

means for developing a second modulation function component comprising a double sideband suppressed carrier signal formed by amplitude modulating said first subcar-

rier signal in accordance with the difference between said stereophonically related audio signals;

means for developing a third modulation function component comprising said second subcarrier signal frequency modulated in accordance with said third audio signal; and

means for combining said first, second and third modulation function components for producing said composite modulation function.

4,339,773

DEVICE FOR POWER AMPLIFICATION OF A COMPOSITE TELEVISION SIGNAL

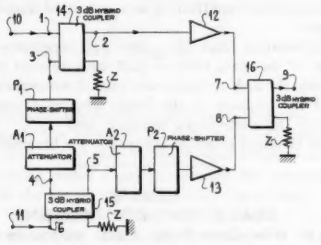
Henri Chemin; Claude Cluniat, and Bernard Beltzer, all of Chatou, France, assignors to L.G.T Laboratoire General des Telecommunications, Chatou, France

Filed Sep. 16, 1980, Ser. No. 187,822

Claims priority, application France, Sep. 19, 1979, 79 23338

Int. Cl.³ H04N *5/14, 5/38*

U.S. Cl. 358—184 **5 Claims**



1. A device for power amplification of a composite television signal comprising at least one standard carrier signal at the transmission frequency modulated by an item of videofrequency information, wherein said device comprises a modulated high frequency carrier signal input, means for generating at two separate outputs a reduced-level HF modulated carrier signal and an unmodulated HF carrier signal which are connected to the HF signal input, amplification means comprising a first HF amplifier having one input coupled to one output of the generating means and a second HF amplifier having one input coupled to the other output of the generating means for separate amplification of the reduced-level modulated HF carrier signal and of the unmodulated HF carrier signal, and combination means having two inputs connected to the outputs of the amplifiers for delivering the amplified modulated carrier signal to be transmitted.

4,339,774

APPARATUS AND METHOD FOR GENERATING A DISPERSED DOT HALF TONE PICTURE FROM A CONTINUOUS TONE PICTURE

Stephen Temple, Cambridge, England, assignor to Cambridge Consultants Limited, Cambridge, England

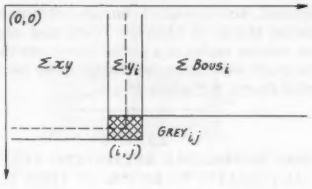
Filed Dec. 19, 1980, Ser. No. 218,302

Claims priority, application United Kingdom, Dec. 20, 1979, 7943894

Int. Cl.³ H04N *1/40*

U.S. Cl. 358—283 **17 Claims**

1. Apparatus for generating a dispersed dot half tone picture from a continuous tone picture comprising means for formulating a greyscale matrix of picture element greyscale values representative of the continuous tone picture; processing means serving to produce through sequential processing of the picture elements along successive lines of the matrix an identically dimensioned binary matrix of picture element binary print values and output means providing a dispersed dot half tone picture by assigning fixed size print dots to the picture elements in accordance with the respective binary print values; characterised in that the processing means comprises column summing means for maintaining and updating for each matrix column a cumulative weighted sum of errors between the greyscale and binary values at picture elements already processed in that column, said errors being weighted in accordance with the proximity of the associated picture element to the line containing the picture element being processed; sector summing means for providing at the picture element being



processed a cumulative weighted sum of column sums with each column sum in the sector sum being weighted in accordance with the proximity of the associated column to the column containing the picture element being processed and threshold means for comparing the sum of the greyscale value at the picture element being processed and said sector sum of errors with a threshold value to determine the associated print value in the binary matrix.

4,339,775

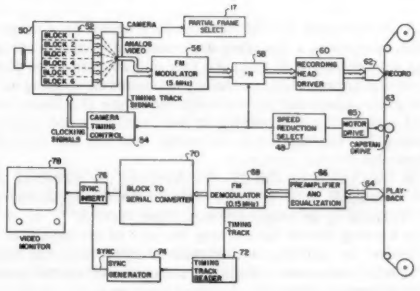
FAST FRAME RATE AUGMENTATION

James U. Lemke, Del Mar, and James A. Bixby, San Diego, both of Calif., assignors to Eastman Technology, Inc., Rochester, N.Y.

Filed Jun. 16, 1980, Ser. No. 159,424

Int. Cl.³ H04N *5/785, 3/14*

U.S. Cl. 360—10 **3 Claims**



1. Fast frame recorder apparatus for use in displaying scene information in slow motion on a video monitor, said apparatus comprising:

(a) a camera operable at a camera whole-frame rate for producing a camera signal representative of a sequence of whole frames of information, said camera being comprised of (1) an area image sensor that is readable in blocks of photosite rows, (2) means for selecting a number of said blocks of photosite rows for readout wherein the total number of blocks divided by said selected number of blocks is an integer N, (3) means for producing successive pluralities of partial frames of information by reading out said selected number of blocks of photosite rows N times for each whole frame of said camera and (4) means for producing a succession of whole frames of information comprised of respective pluralities of partial frames of information;

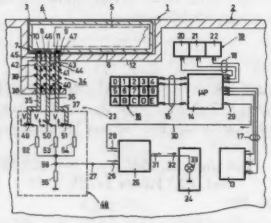
(b) means for processing said camera signal to a form suitable for magnetic recording;
(c) a video monitor having a nominal display frame rate
(d) magnetic recording means for recording and playing back said processed camera signal, the ratio of the recording tape speed to the playback tape speed being a tape speed reduction ratio that equals the ratio of said camera whole-frame rate to the nominal display frame rate of said video monitor, said played back camera signal being applied to said video monitor to form thereon N temporally displaced, non-interlaced, images corresponding to said selected blocks of photosite rows, said display being a slow motion replay at a partial-frame rate that equals the tape speed reduction ratio multiplied by the number N of partial frames per whole frame.

4,339,776

PREPROGRAMMABLE RECORDING SYSTEM WITH AUTOMATIC WARNING OF TIME LIMIT

Erich Länger; Helmut Mach, and Harald Melwisch, all of Vienna, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 24, 1979, Ser. No. 69,442
Claims priority, application Austria, Sep. 1, 1978, 634178
Int. Cl.[3] G11B *23/04, 23/42*
U.S. Cl. 360—69 **10 Claims**



1. A recording system for recording signals on a magnetic tape, comprising a recording apparatus and a cassette containing a given length of magnetic tape and adapted to be placed onto said apparatus, the recording apparatus comprising means for preprogramming an automatic recording at a future time, and a timer for determining at least one start and one stop instant for the automatic recording, wherein the recording apparatus further comprises:
at least one detection unit for detecting the recording time attainable with a cassette placed on the apparatus and providing an output corresponding thereto,
a warning device for warning the user of the apparatus,
means for deriving a reference quantity from the timer, which reference quantity is a measure of a total preprogrammed automatic recording time, and
comparator means for comparing the detection unit output and the reference quantity, the comparator means having an output which controls said warning device, the warning device being actuated when the time needed for the preprogrammed automatic recording exceeds the recording time attainable with the cassette.

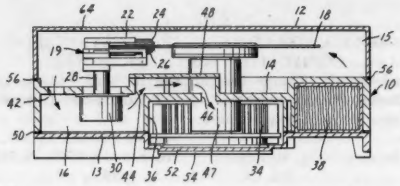
4,339,777

AIR-FLOW SYSTEM FOR A DISK FILE

Norman P. Gruczelak, Thousand Oaks, Calif., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 10, 1980, Ser. No. 139,021
Int. Cl.[3] G11B *17/02*
U.S. Cl. 360—97 **9 Claims**

1. In an air-flow system for a disk file comprising a housing defining a chamber containing (a) a blower, (b) a channel containing a main filter through which all air from the blower must pass, (c) at least one rotating memory disk and associated transducer at the outlet of said channel, (d) a breather filter, and (e) an intake plenum for the blower which receives both recirculating air and outside air directly from the breather filter, the improvement comprising:
(1) a partition divides said chamber into two compartments,
(2) a drive spindle for both said blower and said disk is journalled into the partition, the blower being in one



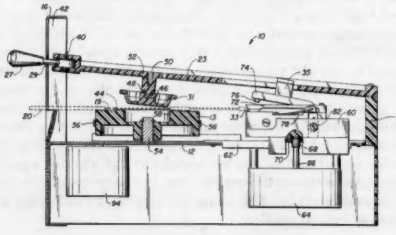
compartment and the disk and associated transducer in the other,
(3) the breather filter has a very high impedance relative to that of the main filter so that the pressures at all points within the disk compartment exceed atmospheric pressure and the pressure at the intake plenum remains slightly below the atmospheric pressure, and
(4) the chamber is sealed except for the breather filter.

4,339,778

DUAL FLOPPY DISC MACHINE

Eugene H. Wise, Grass Valley, Calif., assignor to Atari, Inc., Sunnyvale, Calif.

Filed Apr. 11, 1980, Ser. No. 139,534
Int. Cl.[3] G11B *5/016, 17/06*
U.S. Cl. 360—99 **12 Claims**



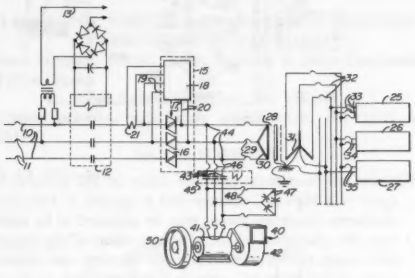
1. A dual floppy disc machine comprising:
a single drive motor having an output shaft;
a pair of rotatable spindles mounted side by side and adapted to receive respective floppy discs thereon;
means for coupling the output shaft of the drive motor to the spindles to drive both said spindles simultaneously;
a pair of read/write heads having a frequency response substantially less than conventional disc machines;
a single carriage having said read/write heads mounted in spaced relationship thereon, said carriage being movable along an axis bisecting a line connecting the centers of the spindles so that the read/write heads are movable in unison radially relative to the respective spindles;
a stepping motor coupled to said carriage to move the carriage along said axis; and
a pair of latching arms, each arm including means for clamping a floppy disc to its respective spindle and means for biasing the read/write head against its respective disc so that the disc may be clamped in place and the read/write head properly biased by a single movement of the latching arm.

4,339,779

APPARATUS FOR PREVENTING DAMAGE BY VOLTAGE INTERRUPTION

John F. Kalbach, Altadena, Calif., assignor to A.C. Manufacturing Company, Cherry Hill, N.J. and Computer Power Systems Corp., Carson, Calif.

Filed Aug. 27, 1980, Ser. No. 181,888
Int. Cl.³ H02H *7/08*
U.S. Cl. 361—33 **5 Claims**



1. Apparatus for preventing malfunction or damage by momentary supply line voltage reduction to an environmentally controlled electronic system having a blower motor; said apparatus comprising motor connection means for connecting the motor across the supply line, power direction sensing means in the supply line upstream of the motor connection means for sensing reverse power flow in the line when the supply line voltage is reduced and the motor operates as a generator, switch means for location in the supply line between the power supply and motor connection means, switch opening means connected between said power direction sensing means and the switch means to open the latter responsive to said reversed power flow, to thereby direct power from the motor operating as a generator to the electronic system, and voltage sensing means for sensing voltages in the supply line on opposite sides of said switch means, and switch closing means connected between said voltage sensing means and switch means to close the latter responsive to resumption of line voltage from the power supply acceptable in phase with voltage from the motor operating as a generator.

4,339,780

VIBRATION CONTROLLER UTILIZING MAGNETIC FORCES

Shigeo Okubo, Meno Park, Calif., assignor to Design Professionals Financial Corp., San Francisco, Calif.

Filed Nov. 10, 1980, Ser. No. 205,845
Int. Cl.³ F16C *39/06*
U.S. Cl. 361—147 **12 Claims**

1. Apparatus for controlling the vibration of a structural element comprising:

a first magnet attached to the structural element;

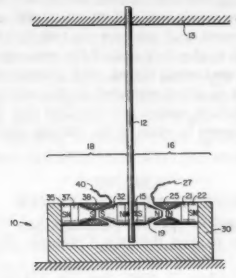
sensing means positioned to detect motion of the structural element including:

a second magnet spaced apart from the first magnet, and means for detecting variations in the strength of the magnetic field between the first magnet and the second magnet; and

vibration control means connected to receive information from the sensing means concerning the motion of the structural element, the vibration control means including:

a third magnet spaced apart from the first magnet, and

means for varying the strength of the magnetic field between the first magnet and the third magnet to increase and decrease the force between the first magnet and the



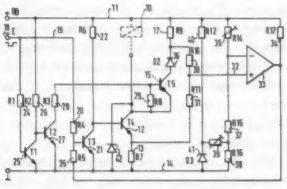
third magnet to control the vibration of the structural element.

4,339,781

APPARATUS FOR CONTROLLING THE ELECTRIC CURRENT THROUGH AN INDUCTIVE CONSUMER, IN PARTICULAR THROUGH A FUEL METERING VALVE IN AN INTERNAL COMBUSTION ENGINE

Klaus Harsch, Ditzingen, and Peter Schülzke, Radolfzell-Stahringen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 14, 1980, Ser. No. 207,056
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1979, 2950692
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—154 **4 Claims**



1. An apparatus for controlling the electric current through an inductive consumer, having first and second ends, of a fuel metering valve for an internal combustion engine, the apparatus including:

first and second voltage supply lines;

a current switching means having first and second ends,

a current measuring means which generates a current signal having first and second ends, connected in series with the inductive consumer and the current switching means and connected to the first and second voltage supply lines such that the first voltage supply line is attached to the first end of the inductive consumer, the second end of the inductive consumer is attached to the first end of the current switching means, the second end of the current switching means is attached to the first end of the current measuring means, and the second end of the current measuring means is connected to the second voltage supply line, the apparatus also including:

a freerunning circuit having a measuring resistor which produces a measuring signal with first and second ends wherein the second end is connected to the first voltage supply line;

a blocking means connected to the current measuring means to block current from flowing through the current mea-

suring means during generation of the measuring signal by the freerunning circuit; and

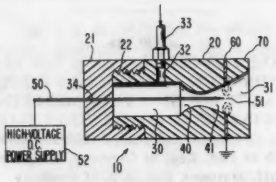
a threshold switch having an input, wherein the first end of the measuring resistor is connected to the second end of the inductive consumer and the first end of the current switching means, and wherein the threshold switch input is connected to the first end of the measuring resistor to receive the measuring signal, and wherein the threshold switch input is also connected to the second end of the current switching means and the first end of the current measuring means to receive the current signal.

4,339,782

SUPERSONIC JET IONIZER

Henry H. S. Yu, and Richard K. Teague, both of Winston-Salem, N.C., assignors to The Bahnson Company, Winston-Salem, N.C.

Filed Mar. 27, 1980, Ser. No. 134,361
Int. Cl.³ H01H *143/32;* B03C *3/00*
U.S. Cl. 361—229 **9 Claims**



1. A supersonic jet ionizer comprising:

(a) an electrode connectable to a high-voltage power supply;

(b) a dielectric structure defining a chamber and a nozzle, said nozzle being in gas-flow communication with said chamber, said dielectric structure having a first channel for admission of a pressurized gas into said chamber, said nozzle being configured to enable said gas to exit from said chamber by passing initially through a region of narrowing cross-sectional area and thereafter through a region of widening cross-sectional area, said dielectric structure having a second channel for insertion of a tip of said high-voltage electrode into said region of widening cross-sectional area; and

(c) an electrically conductive member mounted in said region of widening cross-sectional area of said nozzle, said electrically conductive member being connectable to ground potential so that an electric field can be maintained between said high-voltage electrode and said electrically conductive member.

4,339,783

ALTERNATING CURRENT CORONA DISCHARGE APPARATUS

Hiroshi Kinashi, Uji; Yoshihisa Miwa; Shoshichi Kato, both of Yamatokoriyama, and Hiroyuki Kawataki, Kakogawa, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka and Yahata Electric Works Ltd., Kakogawa, both of, Japan

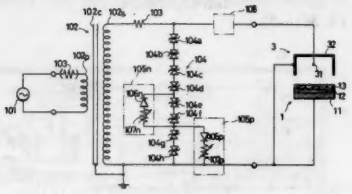
Filed Apr. 20, 1979, Ser. No. 32,028
Claims priority, application Japan, Apr. 21, 1978, 53-48082
Int. Cl.³ H02H *9/00*
U.S. Cl. 361—235 **27 Claims**

1. An alternating current (AC) corona discharge apparatus, comprising

corona discharge electrode means for supporting said discharge,

high AC voltage supply means for supplying a high AC voltage having a waveform with positive and negative going half cycles to said corona discharge electrode means,

adjustable slicing off means coupled to said high AC voltage supply means for limiting the peak portion of at least one of the positive and negative going half cycles of the waveform of said high AC voltage to at least one respective selected limit value, and limiting involving selectively slicing off the peak portion of at least one of said positive and negative half cycles of the waveform at the respective limit value,



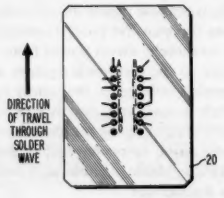
wherein the maximum absolute value of the positive half cycle of a high AC voltage that is applied to the corona discharge electrode means may be adjusted to be smaller than the maximum of the absolute value of the negative half cycle, without substantially varying the effective value of the high AC voltage being supplied to the said corona discharge electrode means.

4,339,784

SOLDER DRAW PAD

James D. Shearer, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,788
Int. Cl.³ H05K *3/34*
U.S. Cl. 361—403 **6 Claims**



1. A printed circuit board structure comprising:

a piece of printed circuit board material;

a plurality of metallic pads located on a surface of said printed circuit board material and aligned in a straight row, each of said plurality of metallic pads having an aperture formed therein;

a circuit component element including a body and a plurality of leads formed in a straight row, each of said plurality of leads being inserted in respective ones of said plurality of apertures formed in said metallic pads, said circuit component element being attached to said piece of printed circuit board material by soldering said inserted leads to said metallic pads as said piece of printed circuit board material flows across a wave of solder;

said straight row of leads having first and second ends, and being inserted in said piece of printed circuit board material such that said straight row of leads is parallel to the direction that said piece of printed circuit board material travels through said wave of solder, said circuit component element being positioned on said piece of printed circuit board material such that said first end of said row of leads enters said wave of solder prior to said second end of said row; and

an additional metallic pad located on said surface of said printed circuit board material, said additional pad being

arranged in alignment with said plurality of metallic pads and adjacent to one of said plurality of metallic pads such that said additional metallic pad provides a draw pad action for reducing solder bridging between adjacent leads located at said second end of said row of leads; said additional metallic pad not providing an attachment point for soldering leads of said circuit component elements or additional circuit component elements.

4,339,785

ELECTRONIC CIRCUIT ARRANGEMENT MOUNTED ON PRINTED CIRCUIT BOARD

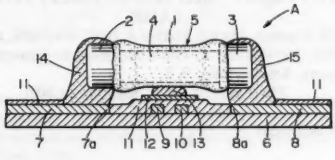
Mitsuo Ohsawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Apr. 8, 1980, Ser. No. 138,438

Claims priority, application Japan, Apr. 26, 1979, 54-56331[U]

Int. Cl.³ H05K *1/18*

U.S. Cl. 361—411 **7 Claims**



1. An electronic circuit arrangement mounted on a printed circuit board in which leadless circuit parts are attached to the printed circuit board with adhesive, the improvement in which a film of a first color having a high luminosity is attached to said printed circuit board in regions to which said adhesive is applied, and said adhesive containing pigment of a second color contrastable to said first color attached to said film, and said leadless circuit parts attached to said board by said adhesive.

4,339,786

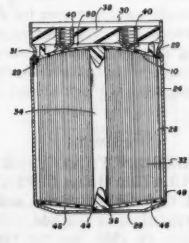
ANCHORING MEANS FOR AN ELECTRICAL DEVICE

William J. Evans, Indianapolis, and Dennis R. Henderson, Greenwood, both of Ind., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Apr. 28, 1980, Ser. No. 144,450

Int. Cl.³ H01G *9/06*

U.S. Cl. 361—433 **7 Claims**



1. In an electrical device of the type including a housing having an open end for receiving an electrical component wherein the improvement comprises:

said housing including an inwardly extending flange located in proximity to said open end and said flange having surface area facing into said housing and away from said open end;

means positioned between said electrical component and said open end for anchoring said electrical component within said housing, said means for anchoring including a hub and at least two arms extending radially outward from said hub, said arms including radially extending arms having an effective distance therebetween which is larger than the size of said open end; and

means for abutting said hub against said electrical component, said arms being made of semi-rigid resilient material and being concavely deflected into said housing, said arms engaging said surface area with said radially extending ends for creating a biasing force against said electrical component and away from said open end of said housing.

4,339,787

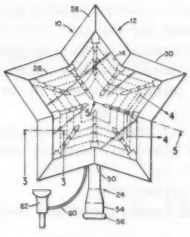
CHRISTMAS DECORATION

Jack Burnbaum, Newton, Mass., assignor to Bradford Novelty Co., Inc., Boston, Mass.

Filed Jul. 7, 1980, Ser. No. 166,140

Int. Cl.³ F21P *1/02*

U.S. Cl. 362—121 **8 Claims**



1. A Christmas tree ornament comprising:

a star-shaped cover having a peripheral side wall extending to one side of and generally perpendicular to the cover, said side wall conforming to the star shape of the cover and defining alternate inwardly acute angles at the outer points of the star and outward obtuse angles at the inner points of the star,

an inner wall on the cover generally parallel and spaced inwardly of the peripheral side wall so as also to describe a star and extending from the same side of the cover as the peripheral wall, said peripheral and inner walls defining a channel about the cover,

slots in the inner wall adjacent the inner and outer points of the star,

means including parallel flanges extending into the channel from the margins of the slots and lamp sockets supported in the slots with the axes of the sockets parallel to the plane of the cover,

lights mounted in each of the sockets and disposed within the inner wall and with the center line of the lights generally bisecting the points of the star,

a window in the cover within the inner wall and through which all the lights are visible from the front of the cover,

wiring in the channel connected to the sockets and a plug connected to the wiring and disposed outside the channel,

a back conforming in shape to the star-shaped cover and having a wall on its front face that describes a star very slightly smaller than the star described by the cover inner wall so that when the back is mounted on the cover the back wall lies immediately within the inner wall,

slots in the back wall opposite the slots in the cover inner wall to engage the sockets,

said back having a mirrored front surface to reflect images of the lights when the ornament is viewed through the window,

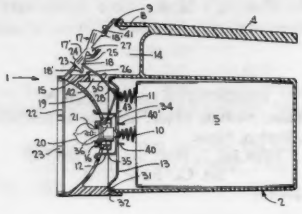
and means for mounting the ornament on the top of a Christmas tree.

4,339,788

LIGHTING DEVICE WITH DYNAMIC BULB POSITION

Robert D. White, Warwick, N.Y., and Donald P. Weiss, Cliffside Park, N.J., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Aug. 15, 1980, Ser. No. 178,446
Int. Cl.[3] F21L 7/00
U.S. Cl. 362—157 4 Claims



1. A portable, self-contained lighting device comprising a head assembly containing the bulb, bulb positioned means, reflector, switch, electrical contact components and a body assembly with provisions for holding a power source in electrical contact with certain elements of the head assembly, wherein

(a) a rotating switch assembly is positioned in a handle remote from the head/body assembly substantially directly above the bulb, and

(b) an electrical contact strip

(1) is preloaded against the switch assembly in the "off" position,

(2) has an over-travel capacity of up to about 50%,

(3) has a compensating flexible knee capable of changing by up to about 40°, and

(4) has a flexed bulb restrictor element which engages the bulb at the bulb base and imparts an axial force on the bulb generally away from the reflector core,

(c) the bulb is housed in a two-pronged, U-shaped bulb retainer that is slidably mounted in slots adjacent the reflector core which engages the bulb terminal at its base and cooperates with the bulb restrictor and the central power source terminal spring to change the position of the bulb axially depending on the presence of the power source, and

(d) a circular electrical contact disc secured to said head assembly at its perimeter with

(1) a central aperture for allowing the central power source terminal spring to contact the base of the bulb retainer, and

(2) a contact rim that engages the electrical contact strip in the general area of the compensating flexible knee.

4,339,789

FLOOD LIGHT AIMING METHOD

Donald E. Husby; Jerry L. Ewing, and William H. Johnson, all of Vicksburg, Miss., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

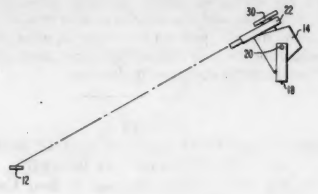
Filed Jul. 22, 1980, Ser. No. 171,063
Int. Cl.[3] F21K 7/00
U.S. Cl. 362—259 7 Claims

1. The method of aiming a flood light at a preselected location comprising the steps of:

situating a laser at said preselected location;

directing the collimated radiative output of said laser at a mirror surface on the face of a flood light;

adjustably aiming said flood light to cause said laser output to reflect from said mirror surface back to said preselected location; and



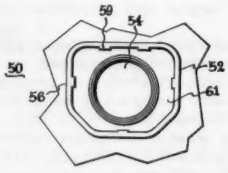
fixing said flood light in a position to remain aimed at said preselected location.

4,339,790

SEALED PREFOCUSED MOUNT FOR PLASTIC PAR LAMP

James M. Hanson, Euclid; Martin J. Graf, Wickliffe, and Irving Bradley, Novelty, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 30, 1979, Ser. No. 61,907
Int. Cl.[3] F21V 29/00
U.S. Cl. 362—267 3 Claims



1. An automotive headlamp having a lens directly sealed to a plastic reflector member to provide a leak-proof seal using a prefocused light source mount in the form of a sealed plastic block having at least two lead wires extending therefrom, a tungsten halogen lamp joined to the ends of said lead wires, and raised receptacle walls on said reflector member extending rearwardly from the reflector member to which the plastic block is directly sealed to form a final mount assembly which positions the tungsten halogen lamp at the focus of the reflecting surface of said reflector member, the improvement wherein said final mount assembly includes locating elements disposed in said raised receptacle walls to center for the plastic block in the center of the receptacle cavity for engagement during a subsequent bonding operation, said locating elements being joined to wall portions of said plastic block by said bonding operation, thus engaging said block to said reflector member.

4,339,791

DC TO LOW FREQUENCY INVERTER WITH PULSE WIDTH MODULATED HIGH FREQUENCY LINK

Daniel M. Mitchell, Cedar Rapids, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 19, 1980, Ser. No. 188,433
Int. Cl.[3] H02M 7/537
U.S. Cl. 363—41 14 Claims

1. A direct current to alternating current pulse width modulated power converter comprising:

controllable inverter means for inverting a direct current signal into a high frequency alternating current signal at a rate and period determined by a first and second control signal;

power steering means for steering the high frequency alternating current signal to its output terminal for a controlla-

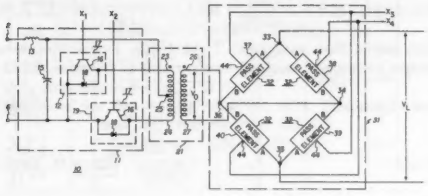
ble period of time and at a power that is controlled by a third and fourth control signal and to provide an alternating current output signal;

link means for linking the high frequency alternating current signal to the power steering means;

reference generator means for generating an alternating current reference signal;

control signal generator means for generating the first and second control signals from the reference signal and the alternating current output signal;

zero cross detector means for detecting each time the alternating current reference signal is at a zero level and to provide a binary detect signal and the complement of the



binary detect signal whereby the binary detect signal and the complement of the binary detect signal alternate logic states each time the alternating current reference signal is at a zero state;

means for obtaining the complement of the first and second control signals;

third gate means for providing the third control signal from the complement of the first control signal and the complement of the binary detect signal or the complement of the second control signal and the binary detect signal; and

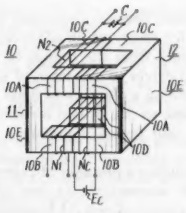
fourth gate means for providing the fourth control signal from the complement of the first control signal and with the binary detect or the complement of the second control signal and the complement of the binary detect signal.

4,339,792

VOLTAGE REGULATOR USING SATURABLE TRANSFORMER

Masayuki Yasumura, and Yoshio Ishigaki, both c/o Sony Corporation, 7-35, Kitashinagawa 6-chome, Shinagawa-ku, Tokyo, Japan

Filed Apr. 8, 1980, Ser. No. 138,341
Claims priority, application Japan, Apr. 12, 1979, 54-44811
Int. Cl.[3] H01F *29/14;* H03F *7/02*
U.S. Cl. 363—75 **5 Claims**



1. A voltage regulator using a saturable transformer comprising:

a transformer including a ferromagnetic core having fours legs and two common portions magnetically joining said four legs, a primary winding wound on said first and fourth legs of said core, a secondary winding wound on said second and third legs of said core and a control winding wound on said first and second legs of said core such that no alternating flux is transferred from said primary winding to said control winding;

an AC power source for supplying said primary winding a fluctuating alternating current;

rectifier means connected to said secondary winding for rectifying an AC voltage derived therefrom to produce a DC output voltage; and

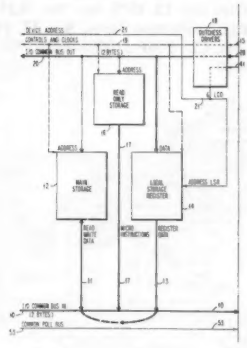
control means including an error detector for detecting a deviation of said output voltage from a desired voltage and bias means for supplying a DC control bias to said control winding in response to a signal from said error detector.

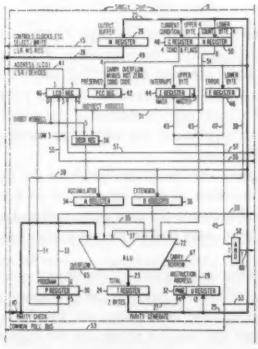
4,339,793

FUNCTION INTEGRATED, SHARED ALU PROCESSOR APPARATUS AND METHOD

George B. Marenin, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 754,193, Dec. 27, 1976, Pat. No. 4,181,934.
This application Aug. 20, 1979, Ser. No. 68,028
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—200 **17 Claims**





1. A computing apparatus, comprising arithmetic logic means for performing arithmetic and logical operations on information and address data;

a unidirectional internal data bus;

first buffer means for storing output data including address and information data from said arithmetic logic means for selective forwarding to a plurality of operand registers including an accumulator register over said unidirectional internal data bus, the unidirectional internal data but receiving data only from said first buffer means;

second buffer means for storing said output data gated thereto over said internal data bus and for loading said output data onto an output bus; said output data including address and information data for selective communication to a plurality of devices; and

input bus means for communicating data from said plurality of devices to said arithmetic logic means.

4,339,794

METHOD AND SYSTEM FOR CONTROLLING INPUT/OUTPUT IN PROCESS CONTROL

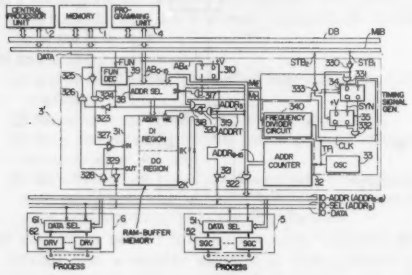
Keiji Hideshima, Fujisawa; Haruo Koyanagi, Ome; Shuichi Senda; Kazuyoshi Asada, both of Hitachi; Norio Murayama, Katsuta; Yoshiyuki Nihashi, and Masaoki Takaki, both of Hitachi, all of Japan, assignors to Hitachi, Ltd. and Nissan Motor Co, Ltd., both of Tokyo, Japan

Filed Sep. 12, 1979, Ser. No. 75,152

Claims priority, application Japan, Sep. 13, 1978, 53-111664

Int. Cl.[3] **G06F** *3/00;* **G05B** *11/01*

U.S. Cl. 364—200 **12 Claims**



1. A method for controlling input/output operations in a process wherein signals representative of the states of object processes to be controlled are fetched and are operated upon by a processor unit in accordance with a program stored in advance, and signals representative of the results of the operations are used to control the object processes, said method comprising the steps of:

storing sequentially the state signals of the object processes to be controlled in an input region of a buffer memory interposed between the processor unit and a process input-/output unit, said buffer memory also having an output region;

reading out the state signals of the object processes stored in the buffer memory, causing the processor unit to effect a logical operation processing on the basis of said state signals and storing the results of the logical operation in the output region of the buffer memory, said processor unit accessing the buffer memory randomly; and

causing the process input/output unit to read out signals representative of the results of the logical operation stored in the output region of the buffer memory so as to provide signals for controlling the object processes to be controlled, said process input/output unit accessing the buffer memory by scanning thereof in a predetermined sequence; whereby input/output communication of the state signals between the processor unit and the object processes to be controlled is effected by way of the buffer memory.

4,339,795

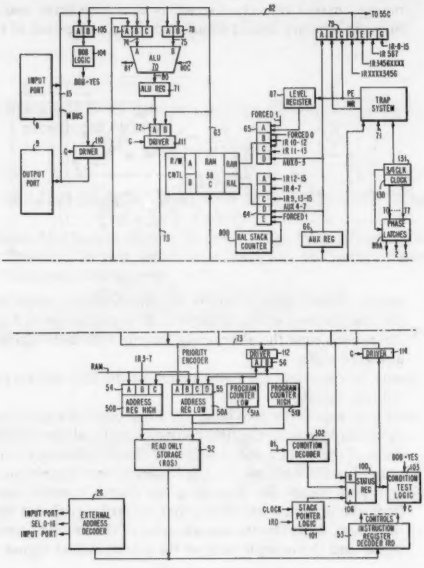
MICROCONTROLLER FOR CONTROLLING BYTE TRANSFERS BETWEEN TWO EXTERNAL INTERFACES

David A. Brereton, and Buddy F. Stansbury, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 921,147, Jun. 30, 1978. This application Mar. 26, 1980, Ser. No. 133,992

Int. Cl.[3] **G06F** *3/00*

U.S. Cl. 364—200 **11 Claims**



1. A microcontroller for controlling the bidirectional transfer of data between two external units, each of which supplies data to said microcontroller selectively on a plurality of input byte busses and receives data from said microcontroller on a plurality of output byte busses, said microcontroller having a storage device for storing instructions at individually addressable locations, each of which is executable during a single machine cycle, an ALU unit including first and second inputs and an output, and means in said ALU for selectively connecting said ALU inputs to said output in response to said instructions, and an ALU register connected to receive the output of said ALU;

an instruction register decoder connected to the output of said storage device for receiving an addressed instruction;

a first bus extending from the output of said ALU register through a gated driver to one input of said ALU;

an input port including a plurality of input funnels each selectively connectable to one of said input byte busses and said first bus, each said funnel including a gate input and an address input;

an output port including a plurality of external output registers each selectively connectable to one of said output byte busses and said output of said ALU register, each said external register having a gate input and an address input;

means connecting said decoder to said funnels and said registers to selectively simultaneously address one of each; and

control means connected to said gate inputs, said gated driver, said decoder, said ALU and said ALU register to cause the transfer of a byte of data from an addressed funnel through said ALU to said ALU register during a first portion of a machine cycle and from said ALU register to said addressed register during a second portion of said machine cycle

whereby an instruction read out from said storage unit to said decoder establishes a first data path during a first portion of said machine cycle between an addressed external funnel and said ALU register to transfer data thereto during said first portion of said machine cycle and a second data path from the output of said ALU register to said addressed register during said second portion of said machine cycle to transfer data from the output of said ALU register to said external register during said second portion of said machine cycle.

4,339,796

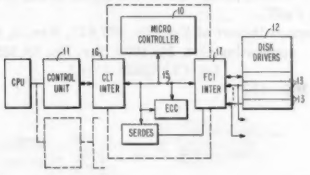
SYSTEM FOR GENERATING A PLURALITY OF DIFFERENT ADDRESSES FOR A WORKING MEMORY OF A MICROCONTROLLER DURING EXECUTION OF CERTAIN INSTRUCTIONS

David A. Brereton, and Buddy F. Stansbury, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 921,147, Jun. 30, 1978. This application Mar. 26, 1980, Ser. No. 133,993

Int. Cl.³ G06F *9/22*

U.S. Cl. 364—200 **7 Claims**



1. In a microcontroller having memory means for storing different types of instructions at individually addressable storage locations, memory addressing means connected to said memory means, a plurality of registers for storing first data which define the condition of said microcontroller at the conclusion of each instruction, means connected to the output of said memory for executing in an ordered manner each of said instructions in a fixed period machine cycle, and a multi-level trap system connected to said memory addressing means and said means for executing for interrupting said ordered manner at the end of an instruction for one fixed period machine cycle selectively in response to one of a plurality of trap request signals, the improvement comprising:

storage means for storing data employed in the execution of said instructions at individual storage locations;

means for addressing said storage means comprising first and second groups of partial address generators and means for selectively combining the partial addresses generated by one generator from each said first and second groups to address one of said storage locations;

said first group of partial address generators including a level register having an input connected to said trap system for defining first groups of storage locations each having a common partial address determined by the contents of said level register;

said second group of partial address generators including a counter for defining storage locations in each of said first groups which have a common partial address determined by the contents of said counter; and

control means connected to said storage addressing means for controlling said storage addressing means during the next fixed period machine cycle following the interruption of said microcontroller to permit the transfer of said first data from said plurality of registers to a like plurality of storage locations, said control means further including means for converting each of said plurality of trap signals to a different unique memory address, means for supplying said unique memory address to said memory addressing means at the start of said next fixed period machine cycle to cause during said next fixed machine cycle the readout of the next instruction to be executed from said unique memory address to said control means concurrently with said transfer of said first data to said storage means, and encoding means associated with said trap system and connected to said level register for supplying to said level register at the end of said next fixed length machine cycle a unique partial storage address determined by said trap signal to permit subsequently executed instructions to address another of said first groups of storage locations in said storage means.

4,339,797

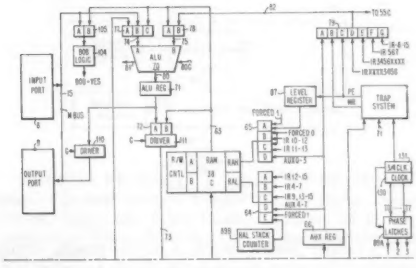
MICROCONTROLLER WITH AUXILIARY REGISTER FOR DUPLICATING STORAGE OF DATA IN ONE MEMORY LOCATION

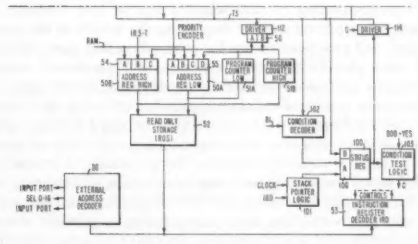
David A. Brereton, and Buddy F. Stansbury, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 921,147, Jun. 30, 1978. This application Mar. 26, 1980, Ser. No. 133,995

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **6 Claims**





1. A microcontroller comprising:

means for storing a plurality of microinstructions at individually addressable storage locations; means for executing each of said microinstructions in a fixed time period comprising an input phase and an output phase, means for transferring the next microinstruction from said storing means to a control means during the executing of a current microinstruction;

said executing means including an ALU unit having first and second input terminals and an output terminal;

an ALU register connnected to said output terminal;

a memory for storing data at a plurality of addresses;

an auxiliary register for storing the same data supplied to one predetermined address of said memory;

a first bus connecting the output of said memory to said one ALU input;

a second bus connecting the output of said auxiliary register to said second ALU input;

a third bus connecting the output of said ALU register to the input of said memory and said auxiliary register;

said control means connected to said storing means and responsive to one instruction for generating (A) first and second gating signals to simultaneously gate the output of said memory and said auxiliary register to the inputs of said ALU during said input phase; (B) a load register signal to store the output of said ALU unit into said ALU register; and (C) a write memory signal during said output phase of said executing means whereby the byte of data transferred from said ALU register to said memory represents the results of a logical operation by said ALU unit on two operands stored in different locations of said memory.

4,339,798

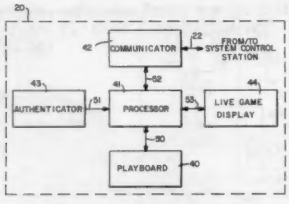
REMOTE GAMING SYSTEM

Richard A. Hedges, Oakland; David L. Shockley, San Francisco; Stanley C. Fralick, Saratoga, and Paul H. Kane, Cupertino, all of Calif., assignors to Remote Dynamics, Oakland, Calif.

Filed Dec. 17, 1979, Ser. No. 104,275

Int. Cl.³ G06F *15/28*

U.S. Cl. 364—412 **10 Claims**



1. In a remote gaming system, a remote gaming terminal comprising: a live game display for displaying a selected one of a plurality of games being played, changeable playboard means for displaying a selected one of a plurality of wagering possibilities corresponding to said selected one of said plurality of games being played and for displaying the results of the game played, and processor means for controlling said game display and said playboard means, wherein said playboard means includes a television monitor for displaying selected games, a transparent matrix of capacitive switches covering said monitor thereby forming a touch-sensitive keyboard having a plurality of touch-sensitive areas representing a plurality of possible wagers, a monitor controller for generating a composite video signal specified by said processor means representing the selected display to be displayed on said monitor such that each of said touch-sensitive areas representing a possible wager corresponds to at least one of said capacitive switches whereby enabling one of said switches permits wagering of the corresponding possible wager for the game played.

4,339,799

TOMOGRAPHIC SCANNER

Manlio G. Abele, Garden City; Norman E. Chase, Yonkers, both of N.Y., and Gareth A. Mair, Stratford, Conn., assignors to New York University, New York, N.Y.

Filed Nov. 15, 1977, Ser. No. 850,891

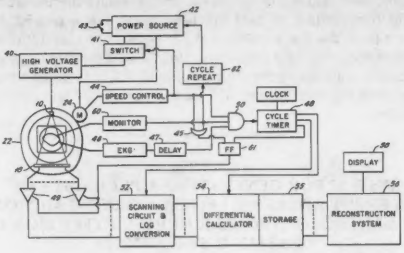
Int. Cl.³ G06F *15/42*; G01N *21/00*

U.S. Cl. 364—414 **12 Claims**

1. An apparatus for tomographically reconstructing differential values of data at points in a plane from input data values which correspond to the values of a plurality of measurable line integrals of said data values, the improvement comprising:

means for determining the value of each of said line integrals at least two distinct times;

means for forming the difference between said values of each of said line integrals at two of said times for applying said differences as said data input values, and tomographically reconstructing said differential values, whereby said



reconstructed values at said data points correspond to time differentials of the actual data values at said points.

4,339,800

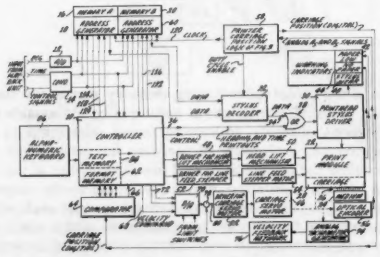
VALIDATOR FOR ELECTROCARDIAL DATA PROCESSING SYSTEM

Donald C. Woods, Lompoc, Calif., assignor to Del Mar Avionics, Irvine, Calif.

Continuation-in-part of Ser. No. 957,527, Nov. 3, 1978. This application Oct. 24, 1979, Ser. No. 88,105

Int. Cl.³ G06F *15/42*

U.S. Cl. 364—417 **17 Claims**



1. In a process for the automatic analysis of ECG data taken at a real time rate for a known period of time over an extended period of time from a patient and wherein the ECG data representing cardiac activity of that patient is stored in a form for later analysis, and wherein the stored ECG data is automatically analyzed at an analysis rate significantly greater than said real time rate, and wherein the validation of said analysis which at least involves ascertaining the location or number of arrhythmic events, or both, with reference to the time when, or during which, such events occurred, the improvement which comprises separately verifying the results of said automatic arrhythmia analysis as compared with the arrhythmia data appearing in at least a portion of said ECG by the steps of:

(a) providing at a rate at least equal to said analysis rate a visual print-out of at least that portion of the ECG automatically analyzed for arrhythmic events,

(b) providing with said visual print-out of said portion of the ECG automatically analyzed an indication of the time represented by the portion of the ECG which is printed out, and

(c) correlating the arrhythmic events reported by said automatic arrhythmia analysis with the arrhythmic events appearing in the corresponding portion of said print-out to ascertain the difference, if any, between the two,

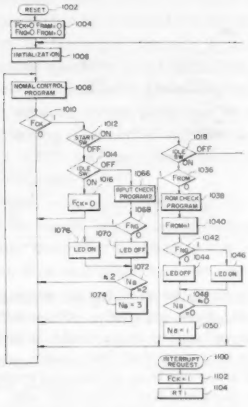
wherein the indication of time in the visual print-out is coordinated with the actual time of day stored as part of said ECG data during which that portion of the ECG was taken from the patient.

4,339,801

AUTOMATIC CONTROL SYSTEM FOR METHOD AND APPARATUS FOR CHECKING DEVICES OF AN AUTOMOTIVE VEHICLE IN USE WITH A MICROCOMPUTER

Akio Hosaka, Yokohama, and Kazuhiro Higashiyama, Atsugi, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 21, 1980, Ser. No. 132,647
Int. Cl.[3] G06F *11/00*
U.S. Cl. 364—431.04 **9 Claims**



1. In a control system for an automotive vehicle for controlling various devices in response to sensor signals fed from sensors, said system having a microcomputer for receiving and processing said sensor signals and for controlling said devices, said microcomputer including an input unit, an output unit, a CPU, and a memory storage device including a ROM and a RAM, a method of controlling said vehicle and checking operation of said microcomputer comprising steps of:

(a) operating a control program in said microcomputer in response to said sensor signals for controlling said vehicle devices,

(b) determining in said CPU and in response to said sensor signals at least a first and a second engine condition,

(c) in response to said first determined engine condition, operating a first checking program for checking operation of said memory storage device, operation of said first checking program including the steps of:

(i) in said RAM, feeding into said RAM a first plurality of data signals corresponding to a first set a data values,

(ii) reading out of said RAM said fed-in data signals,

(iii) comparing each of said read out data signals with each of said first plurality of data signals and generating a first error signal upon non-equivalence of same,

(iv) providing an indication of said first error signal,

(v) in said ROM, reading a second plurality of data values from storage locations of said ROM,

(vi) comparing at least the least significant bits of the sum of said read data values with a reference sum and generating a second error signal upon non-equivalence thereof,

(vii) providing an indication of said second error signal,

(d) in response to said second determined engine condition, operating a second checking program for checking operation of at least one of said input and output units, said second checking progrom including the steps of:

(i) for said input unit, feeding into said input unit a third plurality of data signals corresponding to a third set of data values,

(ii) comparing in said CPU said third set of data values with one set of reference values stored in said memory storage device,

(iii) generating a third error signal if each of said third set of data values is not equal to each of said one set of reference values,

(iv) providing an indication of said third error signal,

(v) for said output unit, feeding a fourth plurality of data signals corresponding to a fourth set of data values from said memory device to said output unit,

(vi) comparing said fourth set of data values with another set of reference values,

(vii) generating a fourth error signal if each of said a fourth set of data values is not equal to each of said other set of reference values, and

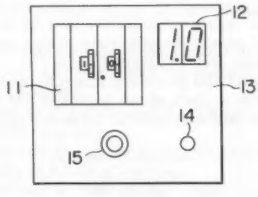
(viii) providing an indication of said fourth error signal.

4,339,802

DIGITAL PROTECTIVE RELAYING DEVICES

Mitsuru Yamaura; Ryotaro Kondow, both of Fuchu; Megumu Mitani, Tama, and Eiichi Okamoto, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 10, 1979, Ser. No. 65,447
Int. Cl.[3] G06F *15/56;* H02H *3/28*
U.S. Cl. 364—483 **3 Claims**



1. In a digital protective relaying device for protecting an electric power transmission system, the device comprising an analog/digital converter for converting an electric quantity related to said electric power transmission system to a digital value, an electronic computer of a digital input/output type for performing a relaying operation, a setting switch for setting a value required for the protection of said power transmission system in said computer, and an indicator, the improvement comprising:

means for locking the relaying operation of said computer,

means for storing in said computer the value set by said setting switch during the locking period of said computer,

means for indicating said value stored in said computer in said indicator,

means for releasing the locking of said computer,

means for comparing the value set by said setting switch with the value stored in said computer, and

means for generating an alarm signal when the two values thus compared are found to be unequal.

4,339,803
VIDEO FRAME STORE AND REAL TIME PROCESSING SYSTEM

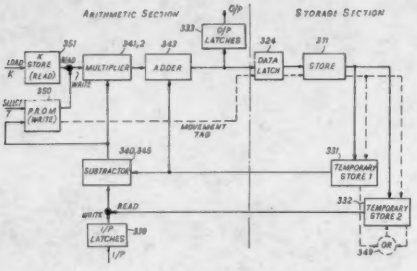
Peter C. Michael, Newbury; Richard J. Taylor, London, and Martin R. Trump, Newbury, all of England, assignors to Micro Consultants Limited, Berkshire, England

Continuation of Ser. No. 15,678, Feb. 27, 1979, abandoned, which is a continuation-in-part of Ser. No. 841,519, Oct. 12, 1977, Pat. No. 4,163,249. This application Aug. 6, 1980, Ser. No. 176,226

Claims priority, application United Kingdom, Oct. 14, 1976, 42751/76; Jul., 1977, 31355/77; Jul., 1977, 31356/77; Jul., 1977, 31357/77

Int. Cl.³ H04N *5/21*

U.S. Cl. 364—724 **22 Claims**



1. A distributed video frame store and real time processing system for manipulating picture point data comprising,

a video frame store for storing the picture point data from a TV picture frame comprising several hundred mutually different lines of video information representing different areas of the frame, said store being subdivided into a plurality of sectors each storing different lines of the video frame and capable of parallel operation;

processing means comprising a plurality of discrete arithmetic units capable of parallel operation, each arithmetic unit being only associated with one of said sectors and having input means connected to receive data from the associated one of said sectors for processing picture point data from that particular sector of the store; and

means to control said processing means to process a different picture point in each of the sectors of the store simultaneously and produce a different processed output from each sector.

4,339,804
MEMORY SYSTEM WHEREIN INDIVIDUAL BITS MAY BE UPDATED

Alan B. Davison, San Diego, and Wayne J. Lewis, Escondido, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 5, 1979, Ser. No. 55,207

Int. Cl.³ G11C *7/00;* **G06F** *13/00*

U.S. Cl. 364—900 **4 Claims**

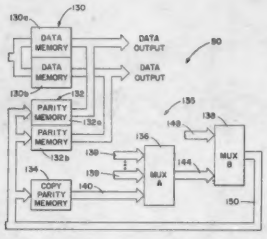
4. In a data processing system having a processor and a parity memory within said processor, the improvement wherein said parity memory comprises:

a primary parity memory having data inputs and a plurality of memory locations, each memory location for storing a plurality of parity bits, said primary parity memory capable of being accessed only for the entire plurality of parity bits in each memory location at a time;

a copy parity memory having data inputs and a plurality of memory locations corresponding to the memory locations in said primary memory and for storing the same pluralities of parity bits that are stored in said primary parity memory;

bit changing circuitry for receiving the parity bits within one memory location of said copy parity memory, for receiving a new bit having a value to which one of the parity bits from said copy parity memory is to be changed, and for changing the one of the parity bits to the value of the new bit, said bit changing circuitry comprising:

a first multiplexer for receiving the parity bits within one memory location of said copy parity memory and groups of new bits from one or more first sources that provide the new bits at a fast speed in relation to said processor, and for selecting either the parity bits or one of the groups of new bits; and



a second multiplexer receiving the selected bits from said first multiplexer and groups of new bits from one or more second sources that provide the new bits at a slow speed in relation to said first sources, and for exchanging one of the bits from said second sources with one of the bits from said first multiplexer; and

means for connecting said bit changing circuitry to the data inputs of both said copy parity memory and said primary parity memory so that the parity bits from the bit changing circuitry, including the changed bit, are returned to their corresponding memory locations in both said copy parity memory and said primary parity memory.

4,339,805
INFORMATION RECORDING SYSTEM

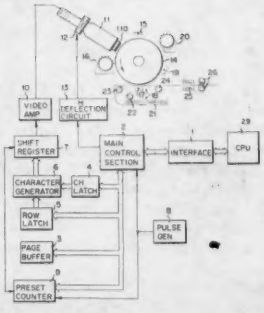
Kazuhiko Iida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 12, 1979, Ser. No. 74,893

Claims priority, application Japan, Sep. 18, 1978, 53-114423

Int. Cl.³ G06F *3/12;* **G06K** *15/02, 15/14*

U.S. Cl. 364—900 **1 Claim**



1. An information recording system for recording one line of characters at a time in dot pattern, through a plurality of horizontal scannings, comprising:

pulse generating means;

interface means for latching character code information, horizontal and vertical character size information and

deflection control information, all supplied from an external information supplying device;

buffer means connected to said interface means for storing at least said character code information which is needed to reproduce one page;

latch means connected to said buffer means for latching character code information read from said buffer means;

preset counter means connected to said interface means and said pulse generating means for (a) receiving information supplied via said external information supplying device and said interface means, which represents the horizontal size of characters to be recorded and (b) determining dot intervals in the horizontal direction in accordance with said horizontal character size information and with the pulse signals from said pulse generating means;

vertical size memory means connected to said interface means for storing information, supplied from said interface means, which represents the vertical size of characters to be recorded;

a direct memory access unit connected to said interface means, buffer means, preset counter means and vertical size memory means for transferring the character code information from said buffer means to said latch means;

first counter means connected to said vertical size memory means for measuring a flyback period and determining a time interval between adjacent horizontal scannings according to the vertical size information supplied from said vertical size memory means;

second counter means connected to said first counter means for providing row information determining a dot pattern, in accordance with an output value of said first counter means;

character signal generating means connected to said second counter means for receiving row information therefrom and said latch means for receiving character information therefrom, said character signal generating means for generating parallel character dot information comprising binary codes representing rows of characters to be printed;

parallel-serial converting means connected to said character signal generating means for converting the parallel dot information provided by said character signal generating means into serial dot information;

electronic printer means for printing dot information supplied by said parallel-serial converting means, said printing means having an optical fiber tube and a rotatable photosensitive drum and being adapted to control vertical deflection as a function of the speed at which the photosensitive drum rotates;

a horizontal deflection circuit connected to said electronic printer means for supplying horizontal synchronization signals to said electronic printer means so that characters to be printed by said printer means may be deflected in the horizontal direction; and

main control means connected to said pulse generating means, interface means, latch means, first counter means, second counter means, buffer means, preset counter means and horizontal deflection circuit for controlling information transfer among said interface means, buffer means, latch means, first and second counter means and horizontal deflection circuit in response to the pulse signals from said pulse generating means.

4,339,806

ELECTRONIC DICTIONARY AND LANGUAGE INTERPRETER WITH FACULTIES OF EXAMINING A FULL-LENGTH WORD BASED ON A PARTIAL WORD ENTERED AND OF DISPLAYING THE TOTAL WORD AND A TRANSLATION CORRESPONDING THERETO

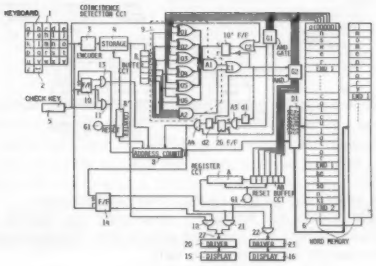
Kunio Yoshida, 2541-10, Hari, Tsugemura, Yamabe-gun, Nara-ken, Japan

Filed Nov. 15, 1979, Ser. No. 94,569

Claims priority, application Japan, Nov. 20, 1978, 53-160221[U]

Int. Cl.[3] **G06F** *15/38*

U.S. Cl. 364—900 **9 Claims**



1. A portable word information storage apparatus comprising:

means for entering a partial word in a specific language, the partial word containing at least one character and at least one blank character;

first means for storing a plurality of full-length words in the same specific language;

first means for addressing the storing means so as to search the plurality of full-length words;

means responsive to the entering means and the storing means for determining a coincidence between the partial word entered by said entering means and corresponding letters of each of the plurality of full-length words stored in the storing means, said means for determining producing a coincidence signal upon detection of each said coincidence;

second means for storing a plurality of translations corresponding to the plurality of full-length words stored in the first storing means;

first means responsive to the coincidence signals produced by determining means for indicating the coincident full-length word on a first display;

second means responsive to the determining means for addressing the second storing means so as to recall each of the plurality of translations corresponding to a coincident full-length word; and

second means responsive to the second addressing means for indicating the translation corresponding to the coincident full-length word in a second display.

4,339,807

POSTAL CHARGE PROCESSING SYSTEM INCLUDING A WEIGHT MEASURING UNIT, POSTAL CHARGE CALCULATING UNIT AND A METER STAMP ISSUING UNIT

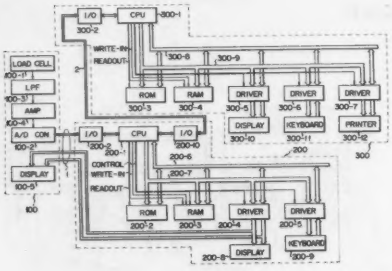
Mitsuo Uchimura, Numazu; Masao Oana, and Yoshiharu Nishimura, both of Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Feb. 25, 1980, Ser. No. 124,610

Claims priority, application Japan, Mar. 7, 1979, 54/26461; Mar. 7, 1979, 54/26464

Int. Cl.[3] G06F *15/20*; G01G *23/22*

U.S. Cl. 364—900 6 Claims



1. A postal charge processing system comprising:

weight measuring means for measuring the weight of a postal article and producing weight data corresponding to the weight of said postal article;

charge calculating means coupled to said weight measuring means and including first switching means for selectively setting postal conditions at least including the way of mail and region of mailing destination; first memory means for storing postal condition data produced in accordance with the operation of said first switching means; display means; second switching means; and first data processing means coupled to said weight measuring means, first and second switching means and to said first memory means for calculating the postal charge from the weight data obtained from said weight measuring means and postal condition data stored in said first memory means for displaying the calculated postal charge on said display means, said first data processing unit including means for generating calculated postal charge data in response to the operation of said second switching means; and

meter stamp issuing means including third switching means; second memory means for selectively storing charge data produced in response to the operation of said third switching means or charge data produced from said first data processing means; fourth switching means coupled to said second memory means for clearing the data in said second memory means; printing means; fifth switching means; and second data processing means coupled to said first data processing means, second memory means, printing means and to said third through fifth switching means, said second data processing means assuming first and second operative states, wherein said second data processing means includes means for causing when it is in said first operative state, charge data to be written into said second memory means in accordance with the operation of said third switching means, the data in said second memory means to be cleared in response to the operation of said fourth switching means, and a meter stamp corresponding to the data in said second memory means to be issued from said printing means in response to the operation of said fifth switching means, and said second data processing means being set to said second operative state in response to a control signal generated from said first data processing means when charge data calculated in said first data processing means has been transferred to said second memory means and includes means for causing the charge data stored in said second memory means to be kept uncleared in spite of the operation of said fourth switching means when said second data processing means is in said second operative state.

4,339,808

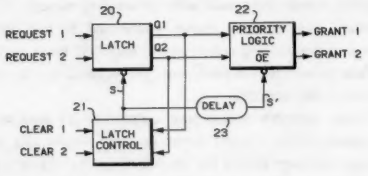
ASYNCHRONOUS EVENT PRIORITIZING CIRCUIT

Robert P. North, Ithaca, N.Y., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1980, Ser. No. 127,003

Int. Cl.[3] G06F *9/46*

U.S. Cl. 364—900 4 Claims



1. A prioritizing circuit responsive to a plurality of asynchronously occurring request signals, said circuit comprising:

a latch circuit responsive to said request signals and to a control signal, said latch circuit generating a plurality of output signals each having a logic level related to that of a respective one of said request signals when said control signal is in a first logic state and latching said output signals when said control signal is in a second logic state;

a latch control circuit responsive to a predetermined logic level of said output signals for generating said control signal in said second logic state;

delay means responsive to said control signal for generating a delayed control signal; and

a priority circuit responsive to said output signals and said delayed control signal, for prioritizing said plurality of output signals having said predetermined logic level and generating a grant signal corresponding to the output signal having the higher priority.

4,339,809

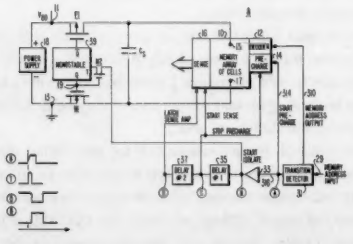
NOISE PROTECTION CIRCUITS

Roger G. Stewart, Neshanic Station, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 19, 1980, Ser. No. 188,887

Int. Cl.[3] G11C *11/40*

U.S. Cl. 365—206 19 Claims



1. The combination comprising:

first and second power terminals for the application therebetween of an external operating potential;

an electronic system having first and second points for the application therebetween of the operating potential for the system, said system having an operating cycle during which said system is particularly sensitive to noise signals;

means connecting a first switch means between said first power terminal and said first point;

means connecting said second point to said second power terminal; and

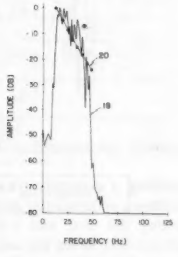
means, responsive to the initiation of said operating cycle coupled to said first switch means for opening said switch means and electrically disconnecting said first point from said first power terminal during said operating cycle.

4,339,810

METHOD OF COMPENSATING SEISMIC DATA FOR EFFECTS OF FREQUENCY DEPENDENT ATTENUATION

James F. Nichols, 3282 Hunters Glen Dr., Missouri City, Tex. 77459, and Peter P. Van Bemmel, 2535 Teague, Houston, Tex. 77080

Filed May 13, 1980, Ser. No. 149,438
Int. Cl.³ G01V *1/37*
U.S. Cl. 367—49 **11 Claims**



1. A process for compensating received propagated seismic signals for frequency dependent absorption in the earth, wherein such signals have been generated by a vibrator source and propagated in the earth as a transmitted sweep signal, and wherein a recorded sweep signal has been recorded as a counterpart to the transmitted sweep signal, comprising the steps of

producing correlated data obtained by crosscorrelating said received propagated seismic signals with said recorded sweep signal,

determining a plurality of Fourier amplitude spectra for said correlated data,

establishing an average quantitative amplitude attenuation function from said Fourier amplitude spectra for all frequencies contained in the recorded sweep signal,

converting said amplitude attenuation function to an inverse amplitude function for compensation of the attenuation for all frequencies contained in the recorded sweep signal,

applying said inverse amplitude function to the recorded sweep signal to obtain a weighted sweep signal for use in correlation, and

producing attenuation compensated correlated data obtained by crosscorrelating said received propagated seismic signals with said weighted sweep signal.

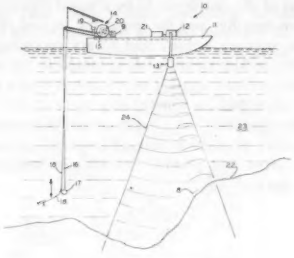
4,339,811

TROLLING DEPTH CONTROLLER

John J. Bednarz, Elmhurst; Phillip J. Moser, Bensenville, and Roger L. Rosenberg, Arlington Heights, all of Ill., assignors to Circom, Inc., Bensenville, Ill.

Filed Nov. 20, 1980, Ser. No. 208,495
Int. Cl.³ G01S *15/88*; A01K *89/00*
U.S. Cl. 367—96 **15 Claims**

1. An automatic trolling depth controller for a fishing boat, comprising: sonar depth indicating means for positioning on the boat and having a sonar transducer connected thereto; a trolling line played out from a position on the boat; a reversible motor connected to raise and lower the trolling line; a depth control unit means connected to drive the motor to raise and lower the trolling line in response to depth indicating signals of the depth indicating means so as to automatically maintain the end of the trolling line at a substantially given constant spacing from the bottom despite variations in lake depth as the fishing



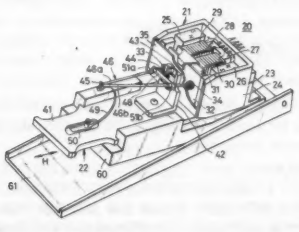
boat trolls; the depth control unit means including means for selectively automatically raising the trolling line by a momentary initial operator command during automatic operation so that the end of the trolling line is returned automatically to the surface without operator control during the raising and then upon subsequent operator momentary command automatically lowering the end of the trolling line back to said given spacing without operator control during the lowering.

4,339,812

SIGNAL PICKUP CARTRIDGE FOR REPRODUCING SIGNALS RECORDED ON ROTATING RECORDING MEDIUMS

Kunio Goto, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 2, 1980, Ser. No. 136,741
Claims priority, application Japan, Apr. 4, 1979, 54/40654
Int. Cl.³ G11B *3/20*
U.S. Cl. 369—130 **4 Claims**



4. A signal pickup cartridge adapted to be detachably mounted in a signal pickup device having pivot bearings and a stylus actuator driven by said pivot bearings in response to a control signal, said pickup cartridge comprisin:

a cantilever having a reproducing stylus at its free end for tracing along a track which is formed on a rotary recording medium lying in a horizontal plane, said track having at least an information signal recorded therealong; said stylus reproducing said information signal, said cantilever being directly supported in a swinging manner at a proximal base end thereof by said pivot bearings in a manner making it possible for stylus displacement in the longitudinal direction, said cantilever being detachable from said pivot bearings;

a cylindrical elastic member through which said cantilever is inserted and supported, said elastic member being mounted on said cantilever at a part which is disposed at a position away from said pivot bearings, said elastic member absorbing vibration;

a holding member having a support in the form of a hollow cylinder for holding said elastic member therein to elastically support said cantilever; and

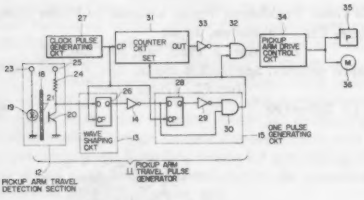
magnetic pressure contact means for causing said proximal base end of the cantilever to be pressed into contact with the pivot bearings and for imparting to said reproducing stylus a pressure against said rotary recording medium when the pickup cartridge is mounted in the pickup device, said pressure contact means comprising a permanent magnet mounted on said holding member for exerting a magentic attractive force between said permanent magnet and another permanent magnet mounted on said pickup device when said pickup cartridge is mounted in the pickup device.

4,339,813

APPARATUS FOR DETECTING GROOVE END OF RECORD DISK

Norio Tomisawa; Atsushi Takeuchi, and Nobuyuki Tamori, all of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 4, 1980, Ser. No. 183,994
Claims priority, application Japan, Sep. 5, 1979, 54-113760
Int. Cl.³ G11B *17/00*
U.S. Cl. 369—231 **17 Claims**



1. A device for detecting a signal groove-end of a record or video disk for use in a phonographic or video signal reproducing apparatus, comprising:

a pickup arm;

means for generating a clock pulse of a certain frequency;

means for generating pickup arm travel pulses of a period inversely proportional to a travel speed of the pickup arm;

means for: (1) counting, to a first predetermined value, pulses delivered from said clock pulse generating means, and (2) generating a count signal until said counting means has reached said first predetermined value, said counting means being set to a second predetermined value in response to said pickup arm travel pulses;

means, responsive to said pickup arm travel pulses and said count signal for generating a groove-end detection signal when one of said pickup arm travel pulses is generated during the occurrence of said count signal;

means responsive to said groove-end detection signal and generating a control signal for controlling the travel of said pickup arm; and

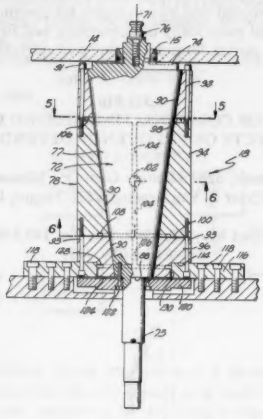
means responsive to said control signal for driving said pickup arm.

4,339,814

SPINDLE ASSEMBLY FOR A VIDEO RECORDER-PLAYBACK MACHINE

Lawrence S. Canino, Torrance, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Oct. 20, 1980, Ser. No. 198,695
Int. Cl.³ F16C *32/06*; G11B *3/36*
U.S. Cl. 369—261 **21 Claims**



1. A spindle assembly for supporting a disc for rotation, comprising:

a spindle shaft including a generally truncated and inverted conical journal defining an upwardly presented shoulder for vertically supporting the disc, and a stud projecting upwardly from said shoulder along the axis of said journal for reception through a central opening formed in the disc;

a spindle housing formed to define a radially inwardly directed bearing surface of generally truncated conical shape for complementary and supporting reception of said journal for rotation of said journal about a vertical axis, said housing having passage means formed therein for communicating a substantially constant and annularly uniform flow of air under pressure to the conical bearing interface between said journal and said bearing surface; and said spindle housing is formed from a plurality of vertically stacked sections connected together to define said conical bearing surface; and including an annular shim for interposition between each adjacent pair of housing sections in the stack for elevationally adjusting said housing sections with respect to each other for adjusting said conical bearing surface to correspond closely with the shape of said journal.

4,339,815

MULTIPLEX CONNECTION UNIT FOR USE IN A TIME-DIVISION EXCHANGE

Jean-Rene Herledan, Lannion; Bernard Le Dieu, Perros Guirec; Jean-Pierre Martin, Pleumeur Bodou, and Daniel Quemere, Perros Guirec, all of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed May 5, 1980, Ser. No. 146,985
Claims priority, application France, May 4, 1979, 79 11320
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 **6 Claims**

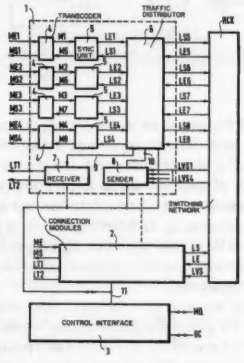
1. A multiplex connection unit for use in a time-division exchange having a local clock, multiregisters, charging units, markers, a monitoring unit connected to an operation and maintenance center and a switching network, and which is connected to other electromechanical or time-division exchanges or line concentrators by incoming and outgoing multiplex lines, wherein the connection unit comprises a control

interface (3) connected to (a) the markers, (b) the monitoring unit and (c) a multiplicity of identical connection modules (1), the connection modules each connected to incoming and outgoing multiplex lines to the local clock, to the switching network (RCX) and to the multiregisters, each connection module comprising:

a plurality of transcoders (4) each connected to an incoming multiplex line (ME) and to an outgoing multiplex line (MS) to convert a first code to a second code and vise versa;

a plurality of synchronising units (5), each connected to one transcoder (4) to detect a frame alignment word and to synchronise time slots of the incoming multiplex line with the local clock and to inject the free alignment words into the outgoing multiplex lines;

a traffic distributor (6) for transferring the time slots of the incoming multiplex lines to the switching network and to a signalling receiver (7) and for transferring the time slots



from the switching network to the outgoing multiplex lines while adding thereto signals received from a signalling sender (8) connected to (a) the input and output of each synchronising unit by two multiplex lines (LE, LS), (b) the input and output of each switching network by as many multiplex pairs (LE5 to LE8, LS5 to LS8) as there are synchronising units, and (c) to the control interface;

a signalling receiver (7) for detecting a multiframe alignment word, for receiving incoming signals from each incoming multiplex line and for sending said incoming signals to the multiregisters connected to the traffic distributor (6), to the control interface and to the multiregisters; and

the signalling sender (8) receiving outgoing signals from the switching network (RCX) relating to each outgoing multiplex and for sending said outgoing signals to the traffic distributor, said sender being connected to the switching network, to the control interface and to the traffic distributor (6).

4,339,816

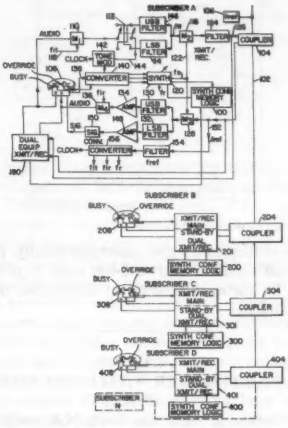
CONFERENCING APPARATUS AND METHODS FOR A FREQUENCY DIVISION MULTIPLEX COMMUNICATIONS SYSTEM

Joseph Reed, Stamford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed May 29, 1980, Ser. No. 154,243
Int. Cl.³ H04J *1/06*
U.S. Cl. 370—71 **19 Claims**

1. A conferencing apparatus for use in a frequency division multiplex communication system, comprising:

a plurality of subscriber stations coupled to a transmission path, each of said stations including a first transmitter and a first receiver having an assigned transmitting and receiving frequency and a second transmitter having selectable transmitting frequencies associated with a second receiver with said second transmitter and receiver in parallel with said first transmitter and receiver, said assigned frequencies having a fixed frequency difference therebetween corresponding to the difference in the transmitter and receiver intermediate frequencies, mixer means at each station operative to mix a predetermined frequency with said intermediate frequencies to derive an independent sideband signal comprising an upper and lower sideband outputs such that one sideband thereof contains communication information and one sideband thereof contains signaling data, each station including bandpass filter means at said transmitters and said receivers for rejecting undesired mixing products, said transmission path for



receiving said filtered independent sideband signal with said path containing a common reference frequency to permit simultaneous communications and signaling between subscriber stations, each station further containing a memory adapted to store therein data indicative of a subscriber station to which a selected subscriber station is communicating with, and logic means operative to transmit said stored data to any other subscriber station to enable said any other station to select said transmitting frequency according to said data as stored, whereby any selected number of said subscriber stations can communicate with each other in a conference mode with said selected subscriber being the nexus of said conference mode.

4,339,817

CLOCK RECOVERY CIRCUIT FOR BURST COMMUNICATIONS SYSTEMS

Masaharu Hata, Yokosuka, and Kotaro Kato, Tokyo, both of Japan, assignors to Nippon Electric Co., Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Sep. 2, 1980, Ser. No. 183,333
Claims priority, application Japan, Sep. 3, 1979, 54-112544
Int. Cl.³ H04L *7/00;* **H04J** *3/06, 6/00*
U.S. Cl. 370—93 **4 Claims**

2. A method of recovering clock pulses from a stream of time division multiple access signals, said method comprising the steps of:

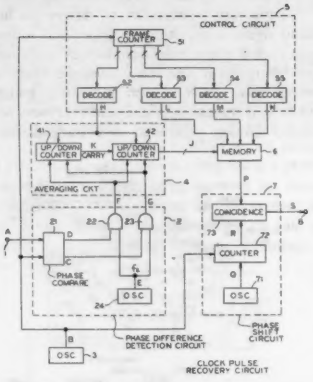
a. comparing the phase of a signal generated locally with the phase of burst signals received from various transmitting stations in a multiple access system;

b. averaging the phase differences detected in said comparison step;

c. storing information of the average phase differences under

addresses which individually identify transmitting stations in said system;

d. reading the stored information out of the memory area corresponding to one of the burst signals transmitted from any given station; and



e. phase-shifting said signal generated locally, in response to the read signal of said read-out step, to provide a clock pulse for the next burst signal transmitted from the same given station.

4,339,818

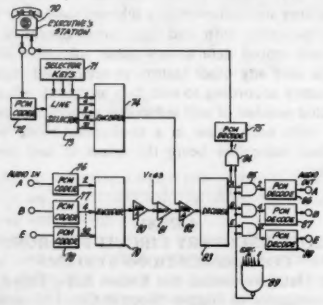
DIGITAL MULTIPLEXER WITH INCREASED CHANNEL CAPACITY

Elliot L. Gruenberg, West New York, N.J., assignor to Broad-Com, Incorporated, West New York, N.J.

Filed Apr. 30, 1980, Ser. No. 145,348

Int. Cl.³ H04J *3/18*

U.S. Cl. 370—112 **8 Claims**



7. A digital communications system comprising a plurality of communication channels for carrying analog information, means associated with each communications channel for serially encoding the analog information into a sequence of multibit binary words, means for multiplying the binary word bits from each channel with a predetermined analog voltage, the predetermined analog voltage being different for each channel, means for summing the analog voltages from each channel, means for subtracting the summed voltage from a fixed voltage whose value is dependent on the number of input channels, means responsive to the difference between the fixed voltage and the summed voltage for generating a multibit code word means responsive to each bit in the multibit code word for connecting each communications channel carrying analog information to each communications channel not carrying analog information.

4,339,819

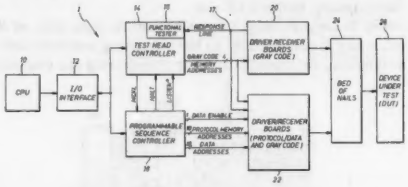
PROGRAMMABLE SEQUENCE GENERATOR FOR IN-CIRCUIT DIGITAL TESTING

Robert G. Jacobson, Brentwood, Calif., assignor to Zehntel, Inc., Walnut Creek, Calif.

Filed Jun. 17, 1980, Ser. No. 160,562

Int. Cl.³ G01R *31/28;* **G06F** *11/00*

U.S. Cl. 371—16 **24 Claims**



1. A circuit for use in an in-circuit digital tester for generating data bus and control input test signals to test electrical components of a circuit under test, the circuit under test having a plurality of data bus signal lines, comprising:

(a) a data memory for storing data bus test signal generating data for generating data bus signals for a plurality of data bus signal lines, said data bus signal generating data outputted in response to a predetermined sequence of data memory addresses;

(b) a control memory for storing control test signal generating data for generating control test signals for a plurality of protocol sequences in which each protocol sequence is defined by a plurality of control test signals generated in response to a predetermined sequence of control memory addresses, each protocol sequence having a starting and a last memory address;

(c) a controller means, for generating the predetermined sequences of data and control memory addresses to generate selected ones of the protocol sequences and data bus test signals, said controller means selectively enabling the generation of the data bus signals during each protocol sequence; and

(d) a driver means associated with each said data and said control memory and responsive to the signal generating data from its associated memory, for generating the data bus and protocol sequence control test signals, said driver means associated with said data memory outputting the data bus signals when enabled by said sequence controller means.

4,339,820

METHOD AND DEVICE FOR CODING AND/OR DECODING AND SECURING DATA

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, Fed. Rep. of Germany

Filed Aug. 20, 1980, Ser. No. 179,710

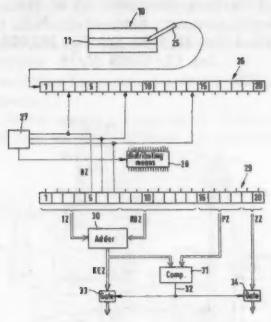
Claims priority, application Fed. Rep. of Germany, Aug. 21, 1979, 2933764

Int. Cl.³ G06F *11/10*

U.S. Cl. 371—53 **7 Claims**

1. A method of coding and securing data marked on a data support, in which a plurality of data units forming a text when arranged in succession are distributed over and recorded on said data support, wherein said text is formed with an individual number associated with said data support, at least one digit of said individual number representing an instruction number

which is recorded at a predetermined zone of said data support, and said instruction number is used for defining a predetermined code for distributing the remaining data units of said text on said data support.

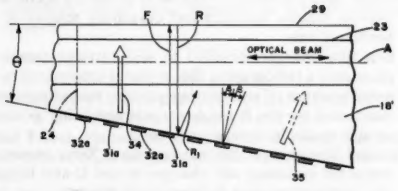


4,339,821

ACOUSTO-OPTIC MODE-LOCKED LASER

Richard A. Coppock, San Jose, and Edward D. Reed, Sunnyvale, both of Calif., assignors to GTE Products Corporation, Stamford, Conn.

Filed Jun. 3, 1980, Ser. No. 155,985
Int. Cl.[3] H01S *3/098*
U.S. Cl. 372—18 5 Claims



1. In laser apparatus having a lasing medium, means to energize said medium whereby to produce a coherent light beam at a predetermined wavelength, spaced reflector means communicating with said beam and defining the laser cavity, the improvement of means for mode locking the laser beam comprising

a piezoelectric acoustic-optic crystal in the path of said beam and traversed thereby along an axis, said crystal having first and second plane surfaces coextensive with said axis, said first surface being parallel with said axis, the plane of said second surface being disposed at an angle θ to the plane of the first surface,

an interdigital transducer formed on said second surface, said transducer having a plurality of interleaved fingers having a period d,

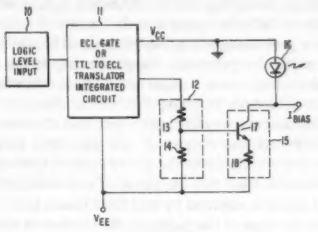
a source of radio-frequency energy connected to said transducer whereby said transducer launches bulk acoustic shear waves in said crystal in a direction perpendicular to said beam for interaction therewith and defining an interaction zone, said shear waves being reflected by said first surface back through said beam to said second surface for reflection thereby out of said interaction zone.

4,339,822

DIODE LASER DIGITAL MODULATOR

James S. Kolodzey, Ossining, N.Y., assignor to Optical Information Systems, Inc., Elmsford, N.Y.

Filed Aug. 8, 1979, Ser. No. 64,785
Int. Cl.[3] H01S *3/10*
U.S. Cl. 372—26 6 Claims



1. A high speed modulator circuit for driving an anode grounded semiconductor laser or light emitting diode, LED, from either Transistor-Transistor Logic, TTL, or Emitter Coupled Logic, ECL, signals, said circuit comprising:

an input terminal for receiving said TTL or ECL signals; p0 gating means for providing a first or second negative voltage control signal in response to said logic level input signals;

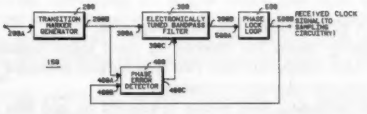
driver means providing voltage-to-current conversion of said first and second control signals, said driver means comprising a transistor and emitter coupled resistor Re, said transistor having its base electrode coupled to a voltage shifting network receiving said control signal, said transistor having its collector coupled to the cathode of the laser or LED to provide high speed modulation current substantially independent of laser or LED impedance characteristics.

4,339,823

PHASE CORRECTED CLOCK SIGNAL RECOVERY CIRCUIT

Joseph P. Predina, Fort Wayne, Ind., and Steven C. Jasper, Schaumburg, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 15, 1980, Ser. No. 178,401
Int. Cl.[3] H03D *3/24;* H04L *25/34*
U.S. Cl. 375—20 2 Claims



1. Apparatus for recovering the clock signal from a received multilevel digital signal comprising:

transition marker generating means, responsive to said received signal, for generating a transition marker signal each time said received signal crosses any of a plurality of predetermined threshold levels, said transition marker generating means thus producing a plurality of transition marker signal groups, each transition marker signal group being followed in time by an eye interval;

electronically tuned bandpass filter means, operatively coupled to the output of said transition marker generating means for attenuating undesired signal components of said transition marker groups exhibiting a frequency substantially above or substantially below the fundamental frequency of said transition marker groups, and for generating an approximately sinusoidal signal at the output of said filter means, the phase of said approximately sinusoidal

signal varying in accordance with a phase error signal applied to a phase control terminal included in said filter means;

phase lock loop means, operatively coupled to the output of said filter means, for generating a recovered clock signal of pulses exhibiting a frequency substantially equal to and locked to the frequency of said approximately sinusoidal signal, and

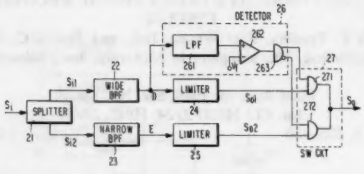
phase error detecting means, including a first and second inputs operatively coupled to the output of said transition marker generating means and the output of said phase lock loop means, respectively, for generating at the output of said detecting means a phase error signal exhibiting indicia of the difference in phase between a selected transitory edge of said recovered clock signal and the center of said eye intervals, the output of said detecting means being operatively coupled to the phase control terminal of said filter means, such that the phase of said substantially sinusoidal signal is adjusted by said filter means until a selected transitory edge of the pulses of the recovered clock signal occurs at the centers of respective eye intervals.

4,339,824

CLOCK RECOVERY CIRCUIT FOR TDMA SYSTEM OR MESSAGE SWITCHING SYSTEM

Yoshio Tanimoto, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Jun. 20, 1980, Ser. No. 161,534
Claims priority, application Japan, Jun. 20, 1979, 54/77814
Int. Cl.[3] H04L *7/00;* H03K *9/04*
U.S. Cl. 375—110 **2 Claims**



1. A clock recovery circuit comprising:

splitting means for dividing an input signal containing a clock component into two split outputs provided at first and second output terminals;

first band-pass filter means connected to said first output terminal and having a first bandwidth selected as to permit extraction of said clock component from said input signal;

second band-pass filter means connected to said second output terminal and having a second bandwidth narrower than said first bandwidth and also selected as to permit extraction of said clock component from said input signal;

first and second amplitude limiter means limiting the output amplitudes of said first and second band-pass filter means, respectively;

switching means responsive to a control signal for selectively supplying one of the outputs of said first and second amplitude limiter means; and

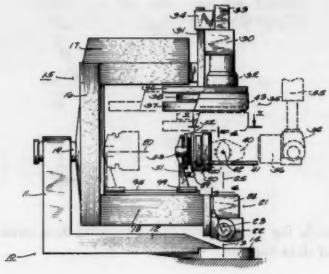
control signal generating means responsive to the output of said first band-pass filter means for generating said control signal, wherein said clock component extracted from said input signal is supplied as an output of said switching means.

4,339,825

BI-PLANE ANGIOGRAPHIC APPARATUS

David M. Barrett; Paul M. Stivender, both of Brookfield, and Robert E. Ueberfluss, Greendale, all of Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 31, 1980, Ser. No. 202,093
Int. Cl.[3] G03B *41/16*
U.S. Cl. 250—490 **12 Claims**



1. X-ray apparatus for bi-plane angiography comprising:

support means movable about a vertical axis,

a U-arm comprising a base section and means mounting said base section on said support means for rotation about a horizontal axis and said U-arm having leg sections, respectively, extending axially from the base section on opposite sides of the horizontal axis,

an X-ray source mounted to one of the leg sections for projecting an X-ray beam along an axis perpendicular to the horizontal axis, the intersection of said vertical, horizontal and X-ray beam axes constituting an isocenter occurring in a region where a body is to be located for examination,

carriage means mounted to the other of the leg sections for moving radially inwardly and outwardly relative to the horizontal axis,

a first film changer mounted to said carriage means for presenting a radiographic film in planes determined by the radial position of said carriage means, said planes being intersected by the X-ray beam axis and being generally parallel to the horizontal axis, and

a second film changer for making lateral X-ray views and means for mounting said changer to said U-arm between said leg sections and between said isocenter and base section for said second changer to present a radiographic film in a plane to which said horizontal axis is generally perpendicular.

4,339,826

RADIO RECEIVER HAVING PHASE LOCKED LOOP FREQUENCY SYNTHESIZER

Minoru Ogita, and Shigenobu Kimura, both of Hamamatsu, Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Jul. 1, 1980, Ser. No. 165,091
Claims priority, application Japan, Jul. 14, 1979, 54-89734
Int. Cl.[3] H04B *1/26;* H03J *7/28;* H03L *7/18*
U.S. Cl. 455—183 **5 Claims**

1. In a radio receiver comprising a phase locked loop frequency synthesizer including a frequency-variable local oscillator for producing a local oscillator signal of a first frequency; a programmable counter for frequency dividing said local oscillator signal; a source of a reference frequency signal; and a phase comparator for comparing in phase a frequency divided output signal of said programmable counter with said reference frequency signal, said phase comparator providing an output coupled to control said frequency-variable local

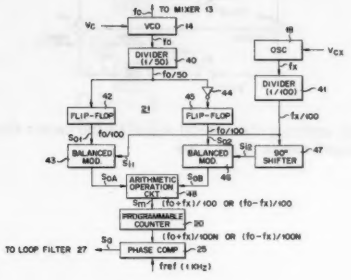
oscillator so as to cause the phase of the frequency divided output signal of said programmable counter to be coincident with the phase of said reference frequency signal;

the improvement comprising:

a first circuit means connected to receive said local oscillator signal of said local oscillator for producing first and second signals having a phase difference of substantially 90° therebetween;

a second oscillator for producing an output signal of a second frequency;

a second circuit means connected to receive said output signal of said second oscillator for producing first and



second modulation signals having a phase difference of substantially 90° therebetween;

a first balanced modulator connected to receive said first signal and said first modulation signal for producing a first modulated output signal;

a second balanced modulator connected to receive said second signal and said second modulation signal for producing a second modulated output signal; and

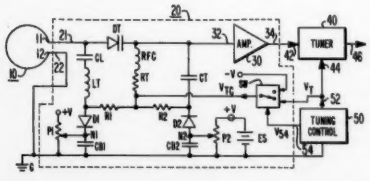
an arithmetic operation circuit connected to receive said first and second modulated output signals and generating an output signal, said output signal of said arithmetic operation circuit being supplied to said programmable counter.

4,339,827

AUTOMATIC TUNING CIRCUIT ARRANGEMENT WITH SWITCHED IMPEDANCES

Rafael Torres, Plainsboro, and John G. N. Henderson, Princeton, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 25, 1980, Ser. No. 210,247
Int. Cl.³ H04B 1/18
U.S. Cl. 455—188 **25 Claims**



1. A tuning circuit arrangement for a receiving loop antenna of a receiver having a tuning system comprising:

first and second input signal terminals to which said loop antenna is coupled and an output signal terminal for coupling said tuning circuit arrangement to said tuning system;

resonance circuit means coupled to said first and second input signal terminals for tuning said loop antenna over a range of frequencies responsive to a first control potential, which first control potential is of first polarity at selected times and which is of second polarity opposite to the first polarity at times other than said selected times, including

variable capacitance means for developing a variable capacitance responsive to said first control potential at said selected times when said first control potential is of said first polarity, and for developing a low impedance compared to that of its variable capacitance at said times when said first control potential is of said second polarity, said variable capacitance means being coupled in circuit with said first and second input signal terminals,

at least one other impedance means for exhibiting an impedance, and

switch means for coupling said other impedance means to said resonance circuit means at least at selected times; and

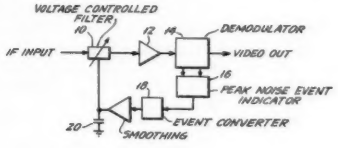
amplifying means having an input connection to which said resonance circuit means is coupled, and having an output connection coupled to said output signal terminal.

4,339,828

AUTOMATIC METHOD FOR ADVANTAGEOUSLY TRADING SIGNAL DISTORTION FOR IMPROVED NOISE THRESHOLD IN FREQUENCY MODULATED RECEIVERS

Norman E. Chasek, 24 Briar Brae Rd., Stamford, Conn. 06903

Filed Oct. 12, 1979, Ser. No. 84,182
Int. Cl.³ H04B 1/16
U.S. Cl. 455—205 **12 Claims**



2. An FM receiver system which includes an FM receiver for receiving an FM signal having an FM carrier level which is passed through a limiter, said FM receiver automatically and continuously trading increased signal distortion for a reduced FM receiver noise threshold level comprising:

detection means for detecting noise peaks which approach, equal or exceed said FM carrier level and the rate at which said noise peaks occur,

means for converting the rate at which said noise peaks occur into a control voltage whose magnitude is functionally related to the rate of occurrence of said noise peaks,

means for averaging out fluctuations in said control voltage, and

a voltage controlled variable bandwidth filter having said control voltage applied thereto for controlling the noise threshold level of said FM receiver by reducing the bandwidth of said filter as the rate of said noise peaks increase and vice versa.

4,339,829

AUTOMATIC TUNING SYSTEM FOR A NARROW BANDWIDTH COMMUNICATION

Donald F. Dimon, 2300 E. Oakland Park Blvd., Ste. 314, Fort Lauderdale, Fla. 33306

Filed Dec. 29, 1978, Ser. No. 974,312
Int. Cl.³ H03J 7/02
U.S. Cl. 455—340 **26 Claims**

1. Automatic control apparatus for control of center frequency of an adjustable time variant filter, having center frequency control means, including:

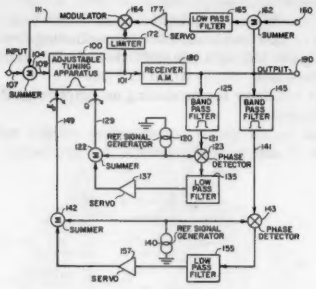
means applying an input signal to be processed in said filter,

means generating a reference signal,

means applying the reference signal to the center frequency control means of the filter, inducing amplitude modulations of the signal at the filter output,

modulation detection means recovering and reproduced the reference induced amplitude modulation signal at the filter output,

phase detection means producing a control signal in accordance with the phase difference between the reference signal and the recovered and reproduced reference induced modulation,



means applying the control signal to the center frequency control means of the filter.

DESIGN PATENTS

GRANTED JUL. 13, 1982

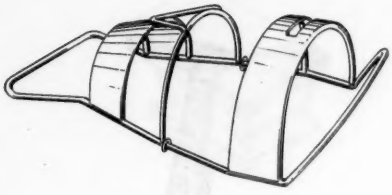
ERRATA

For CLASS	See PATENT NO.
D34–018	265,391
D34–015	265,392

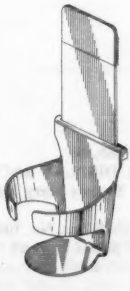
DESIGNS

JULY 13, 1982

265,350
FRAME FOR A FACE GUARD
Ronald H. Davis, 52 Mowat St., Blenheim, New Zealand
Filed Oct. 10, 1980, Ser. No. 196,103
Claims priority, application New Zealand, Dec. 4, 1978, 15795
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—233

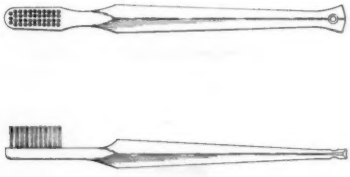


265,351
CUP HOLDER FOR AN AUTOMOBILE DOOR
Dwight N. Wooters, LaGrange, Ga., assignor to W. L. Ross Enterprises, Inc., New York, N.Y.
Filed Aug. 7, 1980, Ser. No. 176,126
Term of patent 14 years
Int. Cl. D03—*99*; D07—*99*
U.S. Cl. D3—40

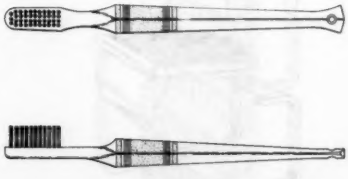


265,352
LUGGAGE
Ted Stark, Jersey City, N.J., assignor to M & M Luggage Co., Inc., Jersey City, N.J.
Filed Aug. 14, 1978, Ser. No. 933,724
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D3—71

265,353
TOOTHBRUSH
Richard M. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Palo Alto, Calif.
Filed Aug. 12, 1980, Ser. No. 177,439
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25

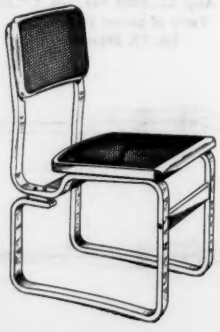


265,354
TOOTHBRUSH
Richard M. Hyman, Iowa City, Iowa, assignor to Cooper Laboratories, Inc., Palo Alto, Calif.
Filed Aug. 12, 1980, Ser. No. 177,505
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—25



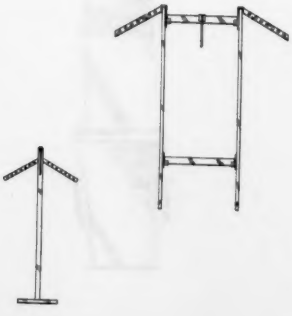
265,355
SEAT
Daniel D. Wistehuff, Hickory, N.C., assignor to Pinnacle Furniture Company, Inc., Claremont, N.C.
Filed Apr. 18, 1980, Ser. No. 141,643
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—71

265,356
CHAIR
France Berlic, 1190 Sugar Sands Blvd., Singer Island, Riviera Beach, Fla. 33404
Filed Mar. 25, 1980, Ser. No. 133,886
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—78

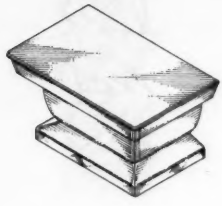


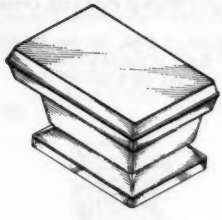
265,357
INVALID BED OR THE LIKE
Henning Bergenwall, Trollstigen 2, 811 00 Sandviken, Sweden
Filed Oct. 1, 1979, Ser. No. 80,480
Claims priority, application Sweden, Oct. 3, 1978, 782265; Denmark, Mar. 29, 1979, 270/79; Austria, Mar. 30, 1979, 516 186; Fed. Rep. of Germany, Mar. 30, 1979, URA 352/79; Norway, Apr. 2, 1979, 60037; Italy, Apr. 3, 1979, 60349/79[U]
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—83

265,358
APPAREL DISPLAY RACK
John A. Rekow, 6130 SW. Taylors Ferry Rd., Portland, Oreg. 97219
Filed Jan. 4, 1980, Ser. No. 109,647
Term of patent 14 years
Int. Cl. D20—*02*
U.S. Cl. D6—85

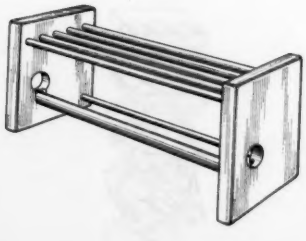


265,359
DISPLAY STAND
John H. Malven, Palos Verdes Estates, Calif., assignor to Jack Malven Corporation, El Segundo, Calif.
Filed Jun. 30, 1980, Ser. No. 164,713
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—85

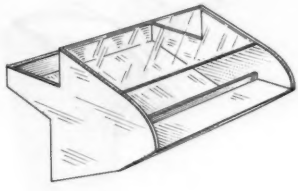


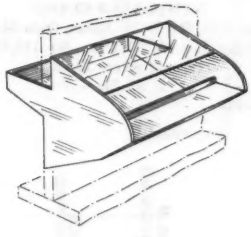


265,360
COMBINED PAPER TOWEL HOLDER AND SHELF
James E. Duggan, 1991 Dellwood Dr., Atlanta, Ga. 30309
Filed Feb. 28, 1980, Ser. No. 125,561
Term of patent 14 years
Int. Cl. D23—*02;* D6—*04*
U.S. Cl. D6—91

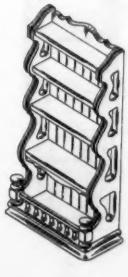


265,361
DISPLAY BIN
Romanino Vona, Milton, Canada, assignor to Bunsmaster Bakeries of America Inc., Milton, Canada
Filed Feb. 6, 1980, Ser. No. 119,172
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—130

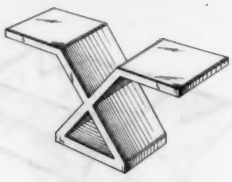




265,362
BOOKCASE
Daniel D. Wistehuff, Hickory, N.C., assignor to Pinnacle Furniture Company, Inc., Claremont, N.C.
Filed Apr. 18, 1980, Ser. No. 141,642
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—153



265,363
TABLE OR SIMILAR ARTICLE
James DiPersia, New York, N.Y., assignor to Avento Designs, Inc., New York, N.Y.
Filed Dec. 14, 1979, Ser. No. 103,954
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



265,364
NEWSPAPER STAND
Calvin Walker, P.O. Box 3431, Akron, Ohio 44311
Filed Jan. 25, 1980, Ser. No. 115,442
Term of patent 14 years
Int. Cl. D6—*99*
U.S. Cl. D6—184

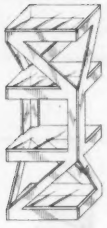
265,365
ETAGERE OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Jun. 2, 1980, Ser. No. 155,467
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

265,366
ETAGERE OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Jun. 2, 1980, Ser. No. 155,468
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

265,367
ETAGERE OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Jun. 2, 1980, Ser. No. 155,469
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

265,368
ETAGERE OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Jun. 2, 1980, Ser. No. 155,770
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

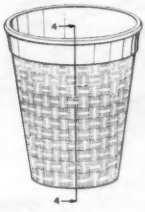
265,369
ETAGERE OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Jun. 2, 1980, Ser. No. 155,838
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186



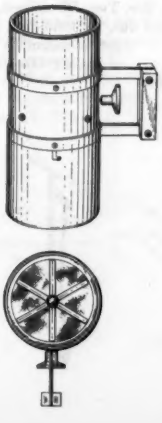
265,370
ETAGERE OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Jun. 2, 1980, Ser. No. 155,839
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

265,371
ETAGERE OR THE LIKE
Lawrence J. Gagner, 1 Neptune Park East, Ormand Beach, Fla. 32074
Filed Jun. 2, 1980, Ser. No. 155,840
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—186

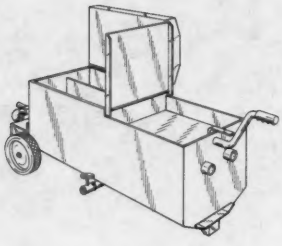
265,372
EMBOSSED BEVERAGE OR PACKAGING CUP
Van D. Groenewold; Hubert E. Christian, and James P. Schwartz, all of Phoenix, Ariz., assignors to Dart Industries Inc., Los Angeles, Calif.
Filed Jan. 7, 1980, Ser. No. 110,022
Term of patent 14 years
Int. Cl. D07—*01;* D09—*03*
U.S. Cl. D7—6



265,373
COMBINED MEASURING AND DISPENSING CONTAINER FOR GRANULATED OR POWDERED MATERIAL
Grover N. Christensen, 18763 Casa Blanca La., Saratoga, Calif. 95070
Filed Jan. 29, 1979, Ser. No. 7,380
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D7—47



265,374
OUTDOOR COOKER
Bert Hamilton, Jr., Oklahoma City, Okla., assignor to Jet-It-Done, Inc., Oklahoma City, Okla.
Filed Apr. 7, 1980, Ser. No. 137,788
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—108

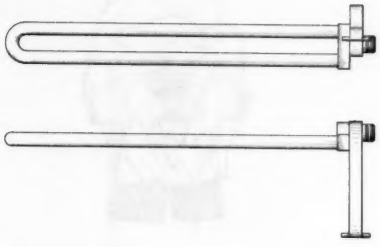


265,375
LOG HANDLING DEVICE
Arthur Alvarez, Rte. Two, Birchwood, Wis. 54817
Filed Jul. 28, 1980, Ser. No. 172,855
Term of patent 14 years
Int. Cl. D7—*08*
U.S. Cl. D7—209

265,376
PRUNER
Christopher R. B. Harrison, Porthcawl, Wales, and Alan K. Pittaway, High Wycombe, England, assignors to Wilkinson Sword Limited, High Wycombe, England
Filed Apr. 19, 1979, Ser. No. 31,373
Claims priority, application United Kingdom, Oct. 25, 1978, 987007
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—5

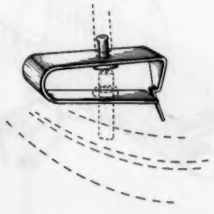
265,377
TUBE EXPANDER TOOL
Kauno L. J. Koskinen, 19600 Hartola, KK Konepaja, Finland
Filed Apr. 14, 1980, Ser. No. 140,208
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—14

265,378
VISE STOP
Stephen G. Roby, Alexandria, Ind., assignor to Flint Tool & Machine Co., Alexandria, Va.
Filed Apr. 10, 1980, Ser. No. 139,132
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—74

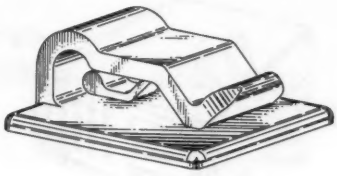


265,379
HOOK
Ruediger Einhorn, Katonah, N.Y., assignor to Coats & Clark, Inc., New Rochelle, N.Y.
Filed Apr. 25, 1980, Ser. No. 143,886
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—367

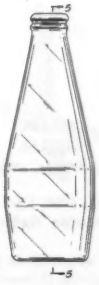
265,380
THREADLESS INSTANT RELEASE BICYCLE TIRE PUMP CONNECTOR
William F. Addington, 2823 Terrace Dr., Chevy Chase, Md. 20815
Filed Oct. 3, 1979, Ser. No. 72,077
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—395



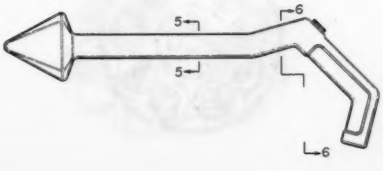
265,381
UNIVERSAL WIRE CLIP
Jesus Borja, Glenview, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.
Filed Dec. 5, 1979, Ser. No. 100,322
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—395



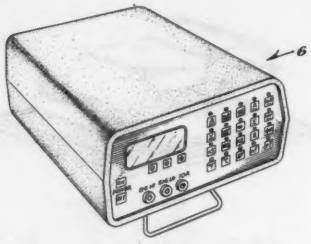
265,382
BOTTLE
Gunnar V. Jönsson, Surte, Sweden, assignor to Aktiebolaget Ramlösa Hälsobrunn, Helsingborg, Sweden
Filed Oct. 3, 1979, Ser. No. 81,727
Claims priority, application Sweden, Mar. 30, 1979, 79-0823
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—349



265,383
CONSUMER RADIATION MONITOR
Gordon R. Perry, New York, N.Y., assignor to The Narda Microwave Corporation, Hauppauge, N.Y.
Filed Apr. 4, 1980, Ser. No. 137,446
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—47



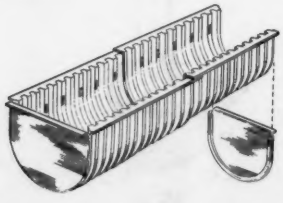
265,384
DIGITAL MULTIMETER
Andrew F. Kay, 340 Serpentine Dr., Del Mar, Calif. 92014
Filed Sep. 12, 1980, Ser. No. 186,699
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—75



265,385
MEDAL
Pierre Rodier, Palaiseau, France, assignor to Helior S.A., Geneva, Switzerland
Filed May 23, 1980, Ser. No. 152,572
Claims priority, application Switzerland, Mar. 18, 1980, 000105
Term of patent 14 years
Int. Cl. D11—*03*
U.S. Cl. D11—106

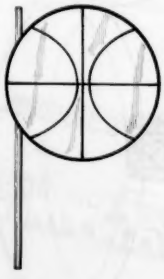
265,386
HANGING ORNAMENT
Brigitte Breyer, Am Bruhl 6, 6074 Rodermark/Ober-Roden, Fed. Rep. of Germany
Filed Nov. 27, 1978, Ser. No. 964,017
Claims priority, application Fed. Rep. of Germany, May 27, 1978, 83078
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—125

265,387
PLANT BOX
Ray A. Nattrass, 61 Clapham Rd., Sefton, New South Wales, Australia (2162)
Division of Ser. No. 915,836, Jun. 15, 1978, Pat. No. Des. 258,409. This application Feb. 12, 1980, Ser. No. 120,792
Claims priority, application Australia, Dec. 20, 1977, 73619; Apr. 12, 1978, 74456
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—156

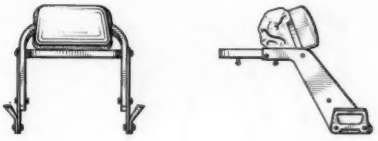


265,388
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,168
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

265,389
PENNANT
Larry B. Ornatek, 100-14th St., North Chicago, Ill. 60064
Filed Mar. 13, 1980, Ser. No. 116,264
Term of patent 3½ years
Int. Cl. D11—*05*
U.S. Cl. D11—166

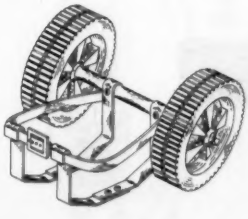


265,390
COMBINED SNOWMOBILE LUGGAGE CARRIER AND BACKREST
Keisuke Yoshida, Huntington Beach, Calif., assignor to Yamaha Motor Corporation, U.S.A., Cypress, Calif.
Filed Jun. 9, 1980, Ser. No. 157,948
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—7

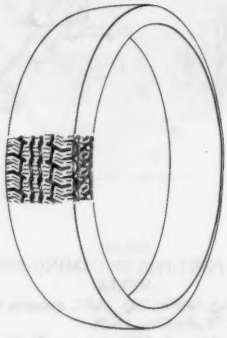


265,391
MOBILE SUPPORT FOR SWIMMING POOL COVER REELS
Le Roy M. Dearing, Studio City, Calif., assignor to L. M. Dearing Associates, Studio City, Calif.
Filed Sep. 6, 1979, Ser. No. 73,086
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—18

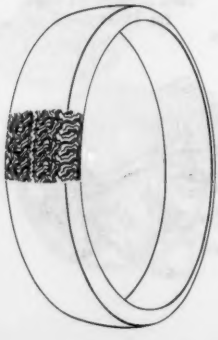
265,392
GOLF BAG CART
George J. Baney, 4719 Innsbruck Dr., Fort Wayne, Ind. 46815
Filed Apr. 9, 1979, Ser. No. 28,107
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—15



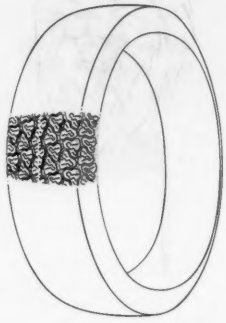
265,393
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 8, 1980, Ser. No. 147,764
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—146



265,394
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 15, 1980, Ser. No. 150,108
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

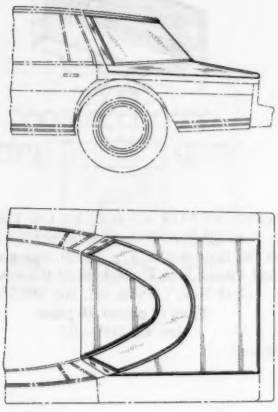


265,395
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed Aug. 7, 1980, Ser. No. 176,169
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

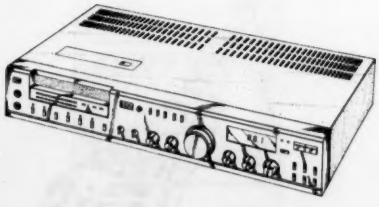


265,396
PNEUMATIC TIRE TREAD AND BUTTRESS
John A. Hutz, Mt. Clemens, Mich., assignor to Uniroyal, Inc., New York, N.Y.
Filed May 8, 1980, Ser. No. 147,901
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—147

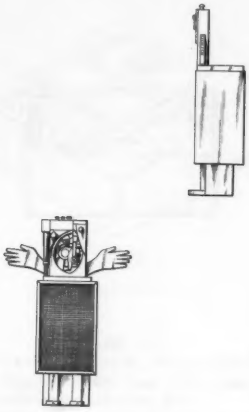
265,397
COMBINED RAISABLE REAR DECK PANEL, WINDOW AND ROOF FOR AN AUTOMOBILE
Leonard W. Beck, 5 Marchester Dr., Dayton, Ohio 45429
Filed Feb. 14, 1980, Ser. No. 121,634
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—156



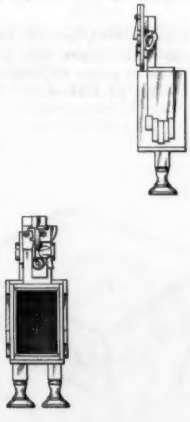
265,398
COMBINED TUNER AND TAPE DECK
Kikuo Ohta, Ikoma; Benito Mishiro, Sakai, and Kunio Hoshino, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Jun. 12, 1980, Ser. No. 158,998
Claims priority, application Japan, Dec. 20, 1979, 54-53710
Term of patent 14 years
Int. Cl. D14—*01, 03*
U.S. Cl. D14—5



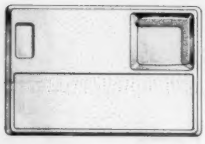
265,399
LOUD SPEAKER CABINET
Fred Feldman, 636 Coffeen St., Watertown, N.Y. 13601
Filed Jun. 3, 1980, Ser. No. 156,173
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

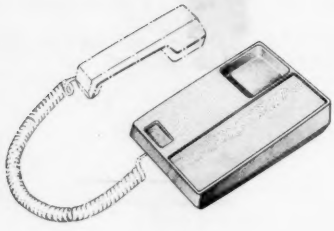


265,400
LOUD SPEAKER CABINET
Fred Feldman, 636 Coffeen St., Watertown, N.Y. 13601
Filed Jun. 3, 1980, Ser. No. 156,174
Term of patent 14 years
Int. Cl. D14—*01*
U.S. Cl. D14—33

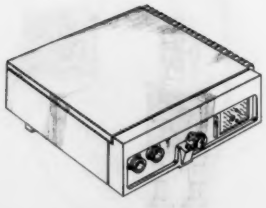


265,401
TELEPHONE STAND
Donald M. Genaro, Haworth, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Filed Oct. 12, 1979, Ser. No. 84,067
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—60

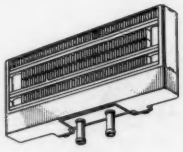




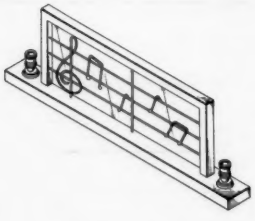
265,402
TRANSCEIVER FOR A CAR TELEPHONE SET
Hisao Fukushima; Kimpei Yamauchi, and Junji Hirooka, all of Tokyo, Japan, assignors to Oki Electric Industry Co. Ltd., Tokyo, Japan
Filed Jun. 17, 1980, Ser. No. 160,833
Claims priority, application Japan, Dec. 25, 1979, 54-054180
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—68



265,403
MOTORCYCLE BY-PASS OIL COOLER
Ytzhak Gewelber, La Mirada, Calif., assignor to Lockhart Industries, Inc., Paramount, Calif.
Filed Jun. 9, 1980, Ser. No. 157,548
Term of patent 14 years
Int. Cl. D15—*01*
U.S. Cl. D15—5

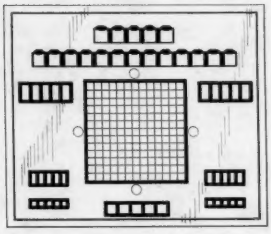


265,404
ORNAMENT FOR AN ORGAN OR THE LIKE
Thomas S. Tender, Fort Brown Apartments, #501, 1900 E. Elizabeth St., Brownsville, Tex. 78520, assignor to Thomas S. Tender and Emma Jane Keck, both of Brownsville, Tex.
Filed Nov. 7, 1980, Ser. No. 205,870
Term of patent 14 years
Int. Cl. D17—*01*
U.S. Cl. D17—9

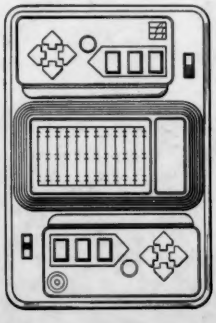


265,405
GUITAR
Mason Lane, 9602 N. 16th Pl., Phoenix, Ariz. 85020
Filed Jun. 5, 1979, Ser. No. 45,786
Term of patent 14 years
Int. Cl. D17—*03*
U.S. Cl. D17—14

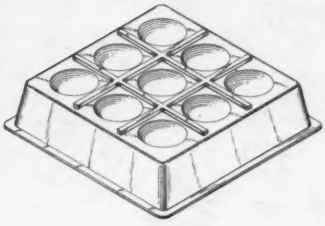
265,406
TARGET FOR A GAME
Edward C. Lane, Rte. One, Box 579, Campo, Calif. 92006
Filed Jul. 2, 1979, Ser. No. 54,135
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—6



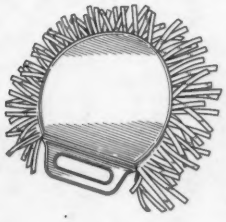
265,407
HAND-HELD ELECTRONIC FOOTBALL GAME HOUSING OR THE LIKE
Tsuneo Hanzawa, Tokyo, Japan, assignor to Entex Industries, Inc., Compton, Calif.
Filed Mar. 14, 1980, Ser. No. 130,365
Claims priority, application Japan, Nov. 19, 1979, 54-048471
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—13



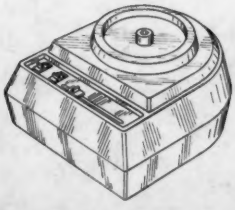
265,408
GAME BOARD
John L. Ericson, 51 Colombia Blvd., Waterbury, Conn. 06710
Filed Oct. 17, 1979, Ser. No. 85,769
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—20



265,409
COVERED FOAM DISK FOR AMUSEMENT PURPOSES
Ronald W. Braasch, Manitowoc, Wis., assignor to H&B Incentive Marketing, Sheboygan, Wis.
Filed Sep. 24, 1979, Ser. No. 78,020
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—100

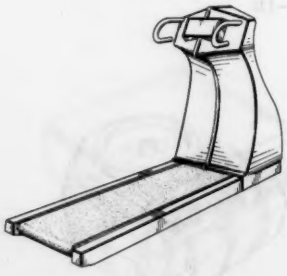


265,410
TOY FOOD PROCESSOR BASE
Timothy Ottinger, Cincinnati, Ohio, assignor to CPG Products Corp., Minneapolis, Minn.
Filed Jun. 4, 1979, Ser. No. 45,038
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—122



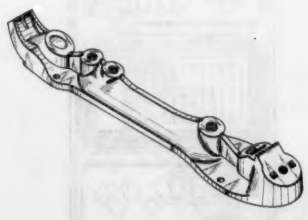
265,411
EXERCISE BOARD
Robert Hedenblad, Regementsgatan 14, S-211 42 Malmo, and Nils I. Jonsson, S:t Hans Grand 28 D, S-222 Lund, both of Sweden
Filed Feb. 4, 1980, Ser. No. 118,483
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—191

265,412
EXERCISE TREADMILL
Raymond L. Summerlot, Terre Haute, Ind., assignor to Nissen Corporation, Cedar Rapids, Iowa
Filed May 3, 1979, Ser. No. 35,520
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—192



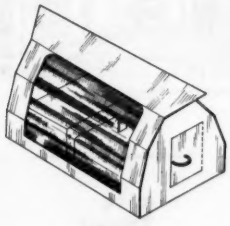
265,413
TENNIS REBOUND BOARD
William B. Millikan, 7592 Dehesa Ct., Carlsbad, Calif. 92008
Filed Aug. 4, 1980, Ser. No. 175,059
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—199

265,414
ROLLER SKATE BASE PLATE
Dennis D. Riggs, 415 Pile St., Ramona, Calif. 92065, and Daniel J. Seach, 2082 Villagewood Rd., Encinitas, Calif. 92024
Filed Aug. 25, 1980, Ser. No. 181,209
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—226



265,415
GAME TABLE FOR CUE-DRIVEN BALLS
Mike J. Bighaus, Rte. 2, Box 543C, Rainier, Oreg. 97048
Filed Jun. 9, 1980, Ser. No. 157,430
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—232

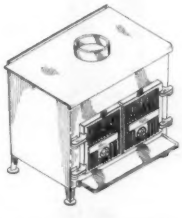
265,416
INSECT STORING TOY
Douglas J. Jackson, 14199 Valley View Rd., Eden Prairie, Minn. 55343
Filed May 12, 1980, Ser. No. 149,256
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



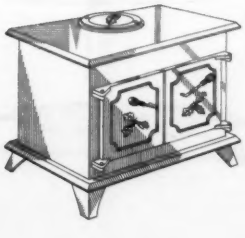
265,417
FISH LURE
William Selby, 10605 Altgeld, Melrose Park, Ill. 60164
Filed Jul. 16, 1980, Ser. No. 169,304
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—29

265,418
HOSE COUPLING
Ho Chow, River Edge, N.J., and David L. Beaver, Long Beach, Calif., assignors to Beatrice Foods Co., Chicago, Ill.
Filed Sep. 26, 1979, Ser. No. 79,234
Term of patent 14 years
Int. Cl. D23—*99*
U.S. Cl. D23—43

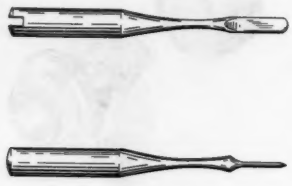
265,419
STOVE
Bennie K. Gant, 5691 Lolene Way, Salt Lake City, Utah 84118
Filed Jun. 11, 1980, Ser. No. 158,480
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



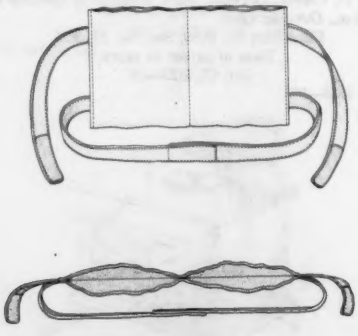
265,420
STOVE
Richard D. Craver, Orrville, Ohio, assignor to Orrville Products, Inc., Orrville, Ohio
Filed May 21, 1980, Ser. No. 151,936
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



265,421
SPATULA ATTACHMENT FOR A DENTAL TOOL
Lonny J. Moore, Denver, and Lincoln P. Tague, Lakewood, both of Colo., assignors to Teledyne Densco, Division of Teledyne Industries, Inc., Denver, Colo.
Filed Apr. 17, 1980, Ser. No. 141,002
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10



265,422
MULTICOMPARTMENT ICE BAG WITH ATTACHING MEANS
Betty T. Howe, 2611 Dolly Ridge Rd., Birmingham, Ala. 35243
Filed Jun. 5, 1980, Ser. No. 156,676
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—43

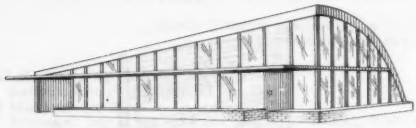


265,423
I.V. BANDAGE
William W. Abraham, New Hartford, and Edward H. Majka, Utica, both of N.Y., assignors to Consolidated Medical Equipment Inc., Utica, N.Y.
Filed Mar. 14, 1980, Ser. No. 130,467
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D24—52

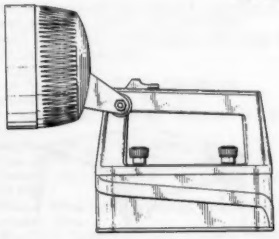
265,424
BUILDING
Patrick J. Kennedy, San Antonio, and E. Davis Chauviere, Dallas, both of Tex., assignors to River Hotel Company, San Antonio, Tex.
Filed May 31, 1979, Ser. No. 44,101
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—25

265,425
COLLAPSIBLE MOBILE WORK PLATFORM HAVING TELESCOPIC LEGS
Stig Graas, Västra Frölunda, Sweden, assignor to Stig Graas, Västra Frölunda, Sweden
Filed Dec. 27, 1978, Ser. No. 974,133
Claims priority, application Sweden, Jun. 30, 1978, 781637
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D25—66

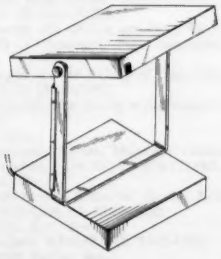
265,426
BUILDING STRUCTURE
Walter F. Feuchs, 16 Lake St., White Plains, N.Y. 10603
Filed May 19, 1980, Ser. No. 150,995
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—18



265,427
BATTERY OPERATED LANTERN
Kittson Mann, Kowloon, Hong Kong, assignor to Chung Mei Metal and Plastic Factory Ltd., Kowloon, Hong Kong
Filed Dec. 3, 1979, Ser. No. 99,593
Claims priority, application United Kingdom, Jun. 19, 1979, 990349
Term of patent 3½ years
Int. Cl. D26—*02*
U.S. Cl. D26—44



265,428
LAMP
Robert W. Eickmeyer, New York, N.Y., assignor to Estee Lauder Inc., New York, N.Y.
Filed Jul. 1, 1980, Ser. No. 164,856
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—63

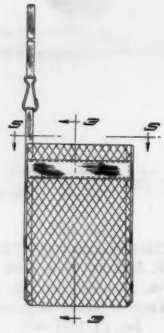


265,429
LAMPSHADE
George S. Miles, 280 Lake View Ridge East, Roswell, Ga. 30067
Filed Aug. 14, 1980, Ser. No. 178,153
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D26—118

265,430
CIGARETTE LIGHTER
Alex Fradkoff, 300 E. 59th St., New York, N.Y. 10022
Filed Feb. 27, 1980, Ser. No. 125,243
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—36

265,431
ELECTRIC DRY SHAVER
Knut O. Yran, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Oct. 6, 1978, Ser. No. 949,301
Claims priority, application United Kingdom, Apr. 11, 1978, 984158/78
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—50

265,432
SOAP CONTAINER
Shirley G. Desnick, 2540 Montery Ave., St. Louis Park, Minn. 55416
Filed Apr. 3, 1979, Ser. No. 26,556
Term of patent 14 years
Int. Cl. D28—*99*
U.S. Cl. D28—63



265,433
DOG HURDLE
Robert B. Koenig, P.O. Box 941, Redmond, Wash. 98052
Filed Feb. 19, 1980, Ser. No. 122,127
Term of patent 14 years
Int. Cl. D30—*99*
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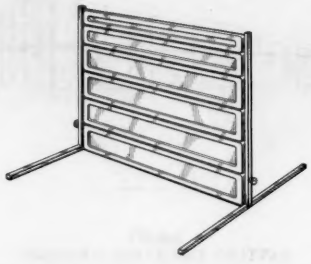
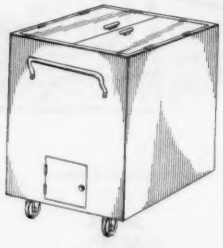


265,434
WOOD STORING CART
Marie S. Phillips, Rte. 1, Box 210, Goldston, N.C. 27252
Filed Jan. 21, 1980, Ser. No. 114,111
Term of patent 14 years
Int. Cl. D12—*02*
U.S. Cl. D34—18



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TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

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Bauder, Richard; and Will, Peter, to Audi Nsu Auto Union Aktiengesellschaft. Apparatus for distribution of fuel from an injection nozzle with respect to a piston in an air compressing internal combustion engine with direct fuel injection. 4,338,898, Cl. 123-279.000.

Bauer, Walter, to AGFA-Gevaert Aktiengesellschaft. Reinforced flexible x-ray film cassette. 4,339,038, Cl. 206-455.000.

Baumgartner Papiers S.A.: *See—*
Siggen, Guy; and Berney, Michel, 4,338,882, Cl. 118-674.000.

Baxter Travenol Laboratories, Inc.: *See—*
Kartinos, Nicholas J.; McGary, Terry J.; and Nolph, Karl D., 4,339,433, Cl. 424-78.000.

Bayard, Michael A.; and Turnbull, James A., to Abbott Laboratories. Combination quick disconnect coupling and liquid cutoff valve. 4,338,933, Cl. 128-214.00R.

Bayer Aktiengesellschaft: *See—*
Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, 4,339,592, Cl. 560-25.000.
Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schundehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.
Kranz, Eckart; and Siegle, Peter, 4,339,612, Cl. 568-649.000.
Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, 4,339,570, Cl. 528-272.000.
Rauchschwalbe, Gunter; Mannes, Karl; and Mayer, Dietmar, 4,339,396, Cl. 260-543.00R.
Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, 4,339,566, Cl. 528-68.000.

BBC Brown, Boveri & Company, Ltd.: *See—*
Flecher, Pierre; and Kofler, Hansjorg, 4,339,680, Cl. 310-62.000.

Beach, David L.: *See—*
Pellegrini, John P., Jr.; Beach, David L.; and Kobylinski, Thaddeus P., 4,339,350, Cl. 252-429.00R.

Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., to Corning Glass Works. Inorganic gels and ceramic papers, films, fibers, boards, and coating made therefrom. 4,339,540, Cl. 501-3.000.

Beattie Systems, Inc.: *See—*
Smith, Harry L. O., 4,339,188, Cl. 354-219.000.

Beauchamp, Gerson E.: *See—*
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,339,505, Cl. 428-514.000.

Becher, David Z.; Christenson, Roger M.; Coalson, Richard L.; Pierce, Percy E.; and Schimmel, Karl F., to PPG Industries, Inc. Coating compositions containing pigment dispersants. 4,339,365, Cl. 523-400.000.

Beck, Christian A.; and Macaluso, Paul J., to Pitney Bowes Inc. Eccentric cam for electrophotocopier developer unit. 4,339,196, Cl. 355-3.0DD.

Becker, Dieter: *See—*
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,339,429, Cl. 424-49.000.

Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, to Bayer Aktiengesellschaft. Process for the production of urethanes. 4,339,592, Cl. 560-25.000.

Becton, Dickinson and Company: *See—*
Percarpio, Edward P., 4,338,764, Cl. 53-432.000.

Bednarz, John J.; Moser, Phillip J.; and Rosenberg, Roger L., to Circom, Inc. Trolling depth controller. 4,339,811, Cl. 367-96.000.

Beekhuis, Lambert J., to Vlisco B.V. Process and apparatus for applying liquid to web material. 4,339,481, Cl. 427-428.000.

Beer, Carl C.; and Seng, Robert A., to Sherman Industries, Inc. Vehicle cleaning brush having limited penetration. 4,338,698, Cl. 15-230.160.

Beitecke, Bernd; and Schmidt, Reinhold, to LUK Lamellen und Kupplungsbau GmbH. Automatic towel dispenser. 4,338,801, Cl. 68-13.00R.

Belke, William H.; and Grim, George B., to Caterpillar Tractor Co. Rotating fluidized bed combustor. 4,338,781, Cl. 60-39.350.

Bell, Michael. Garment with absorbent pad. 4,338,686, Cl. 2-93.000.

Bell, Peter M.; and Mao, Ho-Kwang, to Carnegie Institution of Washington. Apparatus for producing solid hydrogen. 4,339,252, Cl. 62-35.000.

Bell, Roy L., to Coal Industry (Patents) Limited. Equipment for laying a layer of elongate material adjacent to an exposed rock or mineral surface in an underground mine. 4,339,216, Cl. 405-303.000.

Bell Telephone Laboratories, Incorporated: *See—*
Chu, Ta-Shing, 4,339,757, Cl. 343-781.00P.
Early, Scott H.; and Savidge, David M., 4,339,632, Cl. 179-90.00B.
Witt, Eugene F., 4,339,105, Cl. 248-500.000.

Beltzer, Bernard: *See—*
Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, 4,339,773, Cl. 358-184.000.

Bendix Corporation, The: *See—*
Gollomp, Bernard P., 4,338,810, Cl. 73-1.00E.
Yee, Henry C., 4,339,723, Cl. 328-111.000.

Bendszus, Otto: *See—*
Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, 4,339,566, Cl. 528-68.000.

Benjamin, Harry L., to Centro Cororation. Angle measuring device. 4,338,723, Cl. 33-174.00L.

Benoy, David C.; and Frederick, George T., to Loewy Robertson Engineering Co. Ltd. Rotary cutter for sheet or strip material and its use in a belt wrapper. 4,339,092, Cl. 242-56.00R.

Benz, Gottlieb; and Egg, Hans-Jakob, to George Fischer Limited. Apparatus for centering and clamping circular workpieces. 4,339,116, Cl. 269-132.000.

Bergmann, Eduard; and Speidel, Volker, to Leopold Kostal, Firma. Automotive vehicle switching electric circuit. 4,339,667, Cl. 307-10.0LS.

Berkestad, Karl-Erik; Danielsson, Lennart; Henriksson, Erik; Svensson, Torsten; and Ostlund, Artur, to Stal-Laval Apparat AB. Heat exchanger for recovery of heat energy from dust-containing waste gases. 4,339,249, Cl. 55-269.000.

Berkstresser, Harold, Jr.; and Spector, George. Lid tidy. 4,339,056, Cl. 220-375.000.

Bernardi, Herbert: *See—*
Mitzel, Wilhelm; Bernardi, Herbert; and Duschek, Rudolf, 4,339,221, Cl. 414-114.000.

Berney, Michel: *See—*
Siggen, Guy; and Berney, Michel, 4,338,882, Cl. 118-674.000.

Bernstorf, E. Gunter: *See—*
Neff, Georg, 4,338,816, Cl. 73-119.00A.

Berrill, William H.; and Bosworth, George H., to USM Corporation. Shoe upper conforming machine. 4,338,695, Cl. 12-10.100.

Berth, Dieter; Hohlfeld, Gottfried; Oliva, Klaus; and Noack, Christian, to VEB Kombinat Fortschritt Landmaschinen Neustadt in Sachsen. Air cooling system for drive engine of an automotive agricultural machine. 4,339,014, Cl. 180-54.00A.

Bessey, Dorothy K., to Rexham Corporation. Triangular prismatic carton. 4,339,067, Cl. 229-22.000.

Bethany Fellowship, Inc.: *See—*
Harder, Willard J.; and Pickett, James M., 4,338,921, Cl. 126-446.000.

Bethlehem Steel Corporation: *See—*
Stavros, Anthony J.; and Crandall, Roger L., 4,339,480, Cl. 427-349.000.

Beune, Joannes H.: *See—*
Marissen, Roelof H.; and Beune, Joannes H., 4,338,716, Cl. 29-456.000.

Bezwada, Rao S., to American Cyanamid Company. Composition for the adhesion of rubber to reinforcing materials. 4,339,359, Cl. 524-512.000.

BFG Glassgroup: *See—*
Dela Ruye, Jacques, 4,339,541, Cl. 501-71.000.

Bhatia, Sushil; and Shuman, Ralph J., to Dennison Manufacturing Company. Electrosensitive recording. 4,339,758, Cl. 346-1.100.

Biber, Conrad H., to Polaroid Corporation. Process for making solid-state color imaging device. 4,339,514, Cl. 430-7.000.

Biberbach, Elke: *See—*
Aldinger, Fritz; Biberbach, Elke; Bischoff, Albrecht; and Harmsen, Nils, 4,339,644, Cl. 200-266.000.

Biblarz, Oscar: *See—*
Gawain, Theodore H.; and Biblarz, Oscar, 4,339,678, Cl. 310-10.000.

Bichet, Lucien, to Societe Immobiliere et Financiere Suchet-Alfort (S.I.F.S.A.). Apparatus for shaping counters in making shoes. 4,338,696, Cl. 12-34.300.

Biedermann, Horst H., to NCR Corporation. Optical sensing of wire matrix printers. 4,339,208, Cl. 400-124.000.

Biggs, Candice B.: *See—*
Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., 4,339,539, Cl. 435-253.000.

Bindrum, Irmgard: *See—*
Seibel, Markus; Huber, Bernd; Bindrum, Irmgard; and Bodenheimer, Dieter, 4,339,520, Cl. 430-155.000.

Binz GmbH & Co.: *See—*
Lehmann, J. C. Ludwig, 4,339,146, Cl. 296-19.000.

Biofuel, Inc.: *See—*
Randalls, Leon C., 4,339,546, Cl. 518-704.000.

Bisacca, Mildred S.: *See—*
Witt, Frank H., Jr., 4,339,062, Cl. 224-148.000.

Bischoff, Albrecht: *See—*
Aldinger, Fritz; Biberbach, Elke; Bischoff, Albrecht; and Harmsen, Nils, 4,339,644, Cl. 200-266.000.

Bison-werke Bahre & Greten GmbH & Co. KG: *See—*
Greten, Berndt; Neubauer, Harry; Seeger, Gunter; Bucking, Gunter; Komp, Hans J.; and Oldemeyer, Wilhelm, 4,339,478, Cl. 427-212.000.

Bixby, James A.: *See—*
Lemke, James U.; and Bixby, James A., 4,339,775, Cl. 360-10.000.

Bjorklund, Gary C.: *See—*
Alvarez, David C.; Bjorklund, Gary C.; and Burland, Donald M., 4,339,513, Cl. 430-1.000.

Black & Decker Inc.: *See—*
Burkholder, Robert F., 4,338,719, Cl. 30-276.000.

Blake, Robert J.; Sokolik, Joseph E., Jr.; and Sterman, Samuel, to Union Carbide Corporation. Method of reducing the strength of adhesion of solid particulate materials to metal surfaces. 4,339,338, Cl. 252-70.000.

Blendax-Werke R. Schneider GmbH & Co.: *See—*
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,339,429, Cl. 424-49.000.

Blitz, James E. Temperature control system for automotive storage components. 4,338,891, Cl. 123-41.310.

Blodee, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., to American Seating Company. Panel wall systems with modular component build-up. 4,338,990, Cl. 160-229.00R.

Bloodworth, Greville G.; and Manley, Martin H., to General Electric Company Limited, The. Carrier-domain magnetometers with compensation responsive to variations in operating conditions. 4,339,715, Cl. 324-252.000.

Bloom, Charles S. Cardiopulmonary resuscitation device. 4,338,924, Cl. 128-28.000.

Bloomfield, Philip: *See—*
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,339,683, Cl. 310-364.000.

Blount, David H. Process for the production of polyester resins. 4,339,366, Cl. 527-100.000.

Boden, Richard M., to International Flavors & Fragrances Inc. Process for augmenting or enhancing the aroma of a detergent using 1-ethoxy-1-ethanol acetate. 4,339,341, Cl. 252-174.110.

Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., to International Flavors & Fragrances Inc. Use of mixture of aliphatic C_{10}-branched olefins in augmenting or enhancing the aroma of perfumes and/or perfumed articles. 4,339,344, Cl. 252-187.240.

Bodenheimer, Dieter: *See—*
Seibel, Markus; Huber, Bernd; Bindrum, Irmgard; and Bodenheimer, Dieter, 4,339,520, Cl. 430-155.000.

Bodenseewerk Geratetechnik GmbH: *See—*
Kordulla, Hans; Gerlach, Hans H.; and Jansen, Dirk, 4,339,097, Cl. 244-3.160.

Bodin, Leo. Switch plate article holder. 4,339,045, Cl. 211-13.000.

Boeing Company, The: *See—*
Walters, William O., 4,339,712, Cl. 324-102.000.
Wright, James M., 4,339,755, Cl. 343-112.00D.

Bogner, Gunther; and Kullmann, Dieter, to Siemens Aktiengesellschaft. Superconducting field winding for the rotor of an electric machine. 4,339,681, Cl. 310-201.000.

Boguth, Walter; and Hirth, Georges, to Hoffmann-La Roche Inc. Pharmaceutical preparations. 4,339,447, Cl. 424-244.000.

Bolinger, Randy L., to Motorola Inc. Electronic cylinder identification apparatus for synchronizing fuel injection. 4,338,903, Cl. 123-476.000.

Bolinger, Randy L.: *See—*
Hunninghaus, Roy E.; and Bolinger, Randy L., 4,338,813, Cl. 73-116.000.

Bom, Cornelis J. G.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,339,004, Cl. 172-537.000.

Boretos, John W.; and Iriguchi, Norio, to United States of America, Health & Human Services. Hydrogel adhesives and sandwiches or laminates using microwave energy. 4,339,295, Cl. 156-275.700.

Borg-Warner Corporation: *See—*
Krueger, Robert H.; Kelly, Robert R.; Hempel, Rudolf M.; and Miglin, Bruce P., 4,338,959, Cl. 137-93.000.
Krueger, Robert H.; Zambrow, John L.; and Cheadle, Brian E., 4,338,997, Cl. 165-134.00R.
Ruhlman, Harold W., 4,338,828, Cl. 74-475.000.

Bosch, Franz-Ulrich: *See—*
Peters, Klaus-Jurgen; Bosch, Franz-Ulrich; Schindler, Herbert; and Nusser, Hermann, 4,338,815, Cl. 73-118.000.

Bosworth, George H.: *See—*
Berrill, William H.; and Bosworth, George H., 4,338,695, Cl. 12-10.100.

Bott, John A.; and Cucheran, John S., to Bott, John A. Vehicle wind deflector. 4,339,145, Cl. 296-1.00S.

Bower, Arnold B., Jr.; and Ojanen, Randall W., to General Electric Company. Method and apparatus for mine roof drilling. 4,339,006, Cl. 175-57.000.

Boyer, Herbert W.: *See—*
Cohen, Stanley N.; and Boyer, Herbert W., 4,339,538, Cl. 435-253.000.

Bozik, John E.: *See—*
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,608, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,609, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,610, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,611, Cl. 568-487.000.

Bradford Novelty Co., Inc.: *See—*
Burnbaum, Jack, 4,339,787, Cl. 362-121.000.

Bradley, Irving: *See—*
Hanson, James M.; and Bradley, Irving, 4,338,708, Cl. 29-25.130.
Hanson, James M.; Graf, Martin J.; and Bradley, Irving, 4,339,790, Cl. 362-267.000.

Braida, Richard L., Jr. Battery bracket for bicycles. 4,339,060, Cl. 224-32.00R.

Brain Dust Patents Establishment: *See—*
Kuchler, Fritz, 4,338,836, Cl. 83-94.000.

Brandenstein, Manfred: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,339,157, Cl. 308-6.00C.
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,339,374, Cl. 524-606.000.

Branik, Michael, to Heraeus Quarzschmelze GmbH. Baths and processes for electrodepositing palladium. 4,339,311, Cl. 204-47.000.

Branlard, Paul; and Merle, Jean-Pierre, to Distugil. Process of preparing stabilized polychloroprene latex. 4,339,372, Cl. 524-169.000.

Brassel, Peter; and Zingg, Rudolf, to Zellweger, Ltd. Method of adjusting a given pretension in threads on tensile strength testing apparatus and the like. 4,338,824, Cl. 73-828.000.

Braswell, Robert L. Combination air tunnel-andiron device and fireplace construction therefor. 4,338,914, Cl. 126-143.000.

Bratt, Martin D.; and Cohen, Abraham B., to Du Pont de Nemours, E. I., and Company. Color proofing system using dot-etchable photopolymerizable elements. 4,339,525, Cl. 430-271.000.

Brauner, Arne H., to International Paper Company. Paperboard food carton. 4,339,068, Cl. 229-33.000.

Brazdil, James F.: *See—*
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,339,394, Cl. 260-465.300.

Bremer, Clemens; and Menges, Horst, to Rheinmetall GmbH. Cartridge belt guiding mechanism in an automatic weapon, the elevation of which is adjustable. 4,338,851, Cl. 89-33.0BB.

Brennan, John F. Electromagnetic devices for actuating piano keys. 4,338,847, Cl. 84-20.000.

Brereton, David A.; and Stansbury, Buddy F., to International Business Machines Corporation. Microcontroller for controlling byte transfers between two external interfaces. 4,339,795, Cl. 364-200.000.

Brereton, David A.; and Stansbury, Buddy F., to International Business Machines Corporation. System for generating a plurality of different addresses for a working memory of a microcontroller during execution of certain instructions. 4,339,796, Cl. 364-200.000.

Brereton, David A.; and Stansbury, Buddy F., to International Business Machines Corporation. Microcontroller with auxiliary register for duplicating storage of data in one memory location. 4,339,797, Cl. 364-200.000.

Breslow, Jeffrey D.; Imatt, Alex; and Oberth, Christian H., to Marvin Glass & Associates. Electronic matrix board game apparatus and method. 4,339,135, Cl. 273-237.000.

Bridges, Harold D.: *See—*
Ricono, Marion P.; and Bridges, Harold D., 4,338,807, Cl. 72-187.000.

Brihier, Gerard C. C., to Facom. Device for measuring the relative position of two objects. 4,339,709, Cl. 324-61.00R.

Brinkman, Willem, to Holec N.V. Device for distributing fuel to a combustion engine. 4,338,904, Cl. 123-499.000.

Briska, Marian: *See—*
Bahr, Dietrich J.; and Briska, Marian, 4,339,477, Cl. 427-146.000.

Bristol-Myers Company: *See—*
Buyniski, Joseph P.; Cavanagh, Robert L.; and Gordon, Maxwell, 4,339,439, Cl. 424-177.000.
Tencza, Thomas M., 4,339,428, Cl. 424-21.000.

British Petroleum Company Limited, The: *See—*
Shaw, Peter V.; and Speed, Stewart, 4,338,874, Cl. 114-50.000.

BroadCom, Incorporated: *See—*
Gruenberg, Elliot L., 4,339,818, Cl. 370-112.000.

Broadwater, Caleb. Simplified pool cleaning apparatus. 4,338,697, Cl. 15-1.700.

Brokmann, Manfred. Support web. 4,339,488, Cl. 428-100.000.

Brooker, Graham J.: *See—*
Sydor, Philip R.; and Brooker, Graham J., 4,339,722, Cl. 328-38.000.

Brooks, Ralph J.; and Mannices, George F. Automatic tire chains. 4,338,988, Cl. 152-216.000.

Brooks, Wayne E.; Hodges, Jimmie R.; and Walker, Morris P., to Pennwalt Corporation. Continuous process for the direct conversion of potassium chloride to potassium chlorate by electrolysis. 4,339,312, Cl. 204-95.000.

Brown & Williamson Tobacco Corporation: *See—*
Sanford, Robert A.; and Johnson, Robert R., 4,338,956, Cl. 131-336.000.

Brown, Winthrop K., to Texaco Inc. Pulsed neutron well logging system and method with synchronization/stabilization pulse verification means. 4,339,663, Cl. 250-270.000.

Brundiek, Horst, to Loecshe GmbH Company. Grinding pan bearing arrangement and drive of a roller mill. 4,339,086, Cl. 241-121.000.

Bruning, Reinhard: *See—*
Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, 4,338,899, Cl. 123-339.000.

Brunswick Corporation: *See—*
Gautraud, Michael G., 4,339,129, Cl. 273-54.00R.
Gifford, Richard L., 4,339,095, Cl. 242-84.21R.

Buchanan, H. F.: *See—*
Jacobson, Earl B.; and Buchanan, H. F., 4,339,163, Cl. 312-1.000.

Buchholz, Karl-Otto; Erdmann, Jurgen; and Fetzer, Gunter, to Erwin Sick GmbH Optik-Elektronik. Reflection light barrier apparatus for recognizing both strongly and weakly reflecting objects. 4,339,660, Cl. 250-221.000.

Bucking, Gunter: *See—*
Greten, Berndt; Neubauer, Harry; Seeger, Gunter; Bucking, Gunter; Komp, Hans J.; and Oldemeyer, Wilhelm, 4,339,478, Cl. 427-212.000.

Bucking, Hans-Walter: *See—*
Diery, Helmut; Wagemann, Wolfgang; Bucking, Hans-Walter; Hille, Martin; and Wallhausser, Karl H., 4,339,459, Cl. 424-316.000.
Hoffmann, Erich; Wagemann, Wolfgang; Tauber, Gunther; May, Adolf; and Bucking, Hans-Walter, 4,339,391, Cl. 260-401.000.

Budan, Gerhard: *See—*
Duyster, Hubert; Voigt, Gunter; and Budan, Gerhard, 4,339,274, Cl. 106-106.000.

Budd Company, The: *See—*
Eggert, Walter S., Jr., 4,338,865, Cl. 105-202.000.

Buhr, Gerhard: *See—*
Sprintschnik, Gerhard; Neubauer, Rudolf; and Buhr, Gerhard, 4,339,530, Cl. 430-331.000.

Buhrer, Carl F.: *See—*
Regan, Robert J.; Cogan, Adrian; and Buhrer, Carl F., 4,339,690, Cl. 315-97.000.

Builders Concrete, Inc.: *See—*
Sluys, Wesley W., 4,339,215, Cl. 405-219.000.

Bujadoux, Karel, to Societe Chimique des Charbonnages-CdF CHIMIE. Process for reducing metallic halides in the vapor phase by means of solid organomagnesium compounds and catalytic components resulting therefrom. 4,339,392, Cl. 260-429.00R.

Bull, Eric W.; and Galloway, Robert D., to Picker International Limited. Coil arrangements. 4,339,718, Cl. 324-319.000.

Bunker Ramo Corporation: *See—*
Makuch, John A.; and Monaghan, Kevin J., 4,339,171, Cl. 350-96.200.

Burdeska, Kurt: *See—*
Muntwyler, Rene'; and Burdeska, Kurt, 4,339,462, Cl. 424-341.000.

Burkhardt, Friedrich: *See—*
Straub, Hans F.; Kindermann, Adalbert; Burkhardt, Friedrich; and Staiger, Hans, 4,338,709, Cl. 29-26.00A.

Burkholder, Robert F., to Black & Decker Inc. Filament type vegetation trimmer. 4,338,719, Cl. 30-276.000.

Burland, Donald M.: *See—*
Alvarez, David C.; Bjorklund, Gary C.; and Burland, Donald M., 4,339,513, Cl. 430-1.000.

Burlington Industries, Inc.: *See—*
Woods, David C., 4,338,754, Cl. 52-393.000.

Burnbaum, Jack, to Bradford Novelty Co., Inc. Christmas decoration. 4,339,787, Cl. 362-121.000.

Burns, Lyle D., to Phillips Petroleum Company. Motor fuel. 4,339,245, Cl. 44-63.000.

Burns, Robert A.: *See—*
Pitts, Frank; Tiethof, Jack A.; and Burns, Robert A., 4,339,352, Cl. 252-449.000.

Burr, Peter; and Chase, Brian D., to International Business Machines Corporation. Convergence unit for cathode-ray tube. 4,339,736, Cl. 335-213.000.

Burri, Peter, to Ciba-Geigy Corporation. Indolinospiropyrane compounds. 4,339,385, Cl. 548-409.000.

Burton, James O.; Dannels, Christopher J.; and Ahlin, Frank J., to Richman Brothers Company, The. Cloth spreading method and apparatus. 4,339,118, Cl. 270-31.000.

Busby, Donald W. Button assembly for rotary rock cutters. 4,339,009, Cl. 175-374.000.

Buttiker, Gero: *See—*
Meier, Peter E.; Gordon, Otto W.; and Buttiker, Gero, 4,339,273, Cl. 106-90.000.

Buyniski, Joseph P.; Cavanagh, Robert L.; and Gordon, Maxwell, to Bristol-Myers Company. Pharmaceutical methods and compositions. 4,339,439, Cl. 424-177.000.

Byerly, Robert M., to TA Mfg. Corp. Clamp. 4,338,707, Cl. 24-257.000.

C & H Combustion: *See—*
Frame, Douglas J., 4,338,963, Cl. 137-375.000.

C. K. Kelley and Sons, Inc.: *See—*
Kelley, Charles K.; and Jones, William W., 4,339,228, Cl. 415-219.00R.

C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,339,004, Cl. 172-537.000.

Caetani, Enzo; and Paradowski, Henri, to Compagnie Francaise d'Etudes et de Construction "Technip". Method of and system for liquefying a gas with low boiling temperature. 4,339,253, Cl. 62-40.000.

Callahan, George E. Hydrometer with improved temperature compensation. 4,338,817, Cl. 73-448.000.

Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., to Celanese Corporation. Poly(ester-amide) capable of forming an anisotropic melt phase derived from p-hydroxybenzoic acid, 2,6-dihydroxynaphthalene, carbocyclic dicarboxylic acid, aromatic monomer capable of forming an amide linkage, and, optionally, additional aromatic diol. 4,339,375, Cl. 524-602.000.

Cambridge Consultants Limited: *See—*
Temple, Stephen, 4,339,774, Cl. 358-283.000.

Camerano, Angelo. Plate solar-heat collector. 4,338,920, Cl. 126-443.000.

Camp, Albert T., to Stang, Peter. Gas generating composition. 4,339,288, Cl. 149-8.000.

Campbell, George T. R. Pressure differential liquid transfer system. 4,339,232, Cl. 417-54.000.

Candor, James T. Electrostatic method and apparatus for treating material. 4,338,729, Cl. 34-1.000.

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Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,339,762, Cl. 346-140.00R.
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Carter, Ernest E., Jr., to Halliburton Company. Knockout pin trap. 4,338,999, Cl. 166-117.000.

Carter, Ronald W.: *See—*
Hill, Jerry M.; and Carter, Ronald W., 4,338,818, Cl. 73-462.000.

Carter-Wallace, Inc.: *See—*
Palinczar, Victor; and Santini, Thomas F., 4,339,550, Cl. 521-99.000.

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Cason, Charles M.: *See—*
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Caterpillar Tractor Co.: *See—*
Belke, William H.; and Grim, George B., 4,338,781, Cl. 60-39.350.
Goloff, Alexander, 4,338,998, Cl. 165-165.000.
Livesay, Richard E., 4,339,156, Cl. 305-22.000.
Papasideris, Stamos I., 4,338,896, Cl. 123-198.00D.
Radigan, Michael T., 4,338,736, Cl. 37-142.00A.
Shelby, Robert L.; and Wilkins, Douglas A., 4,338,890, Cl. 123-195.00A.

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Cox, Roy L., 4,338,806, Cl. 70-417.000.

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Buyniski, Joseph P.; Cavanagh, Robert L.; and Gordon, Maxwell, 4,339,439, Cl. 424-177.000.

Cavazza, Claudio. Device for the quick inhalation of drugs in powder form by humans suffering from asthma. 4,338,931, Cl. 128-203.150.

CBS Inc.: *See—*
Rhodes, Harold B., 4,338,848, Cl. 84-253.000.

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Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., 4,339,375, Cl. 524-602.000.
Hicks, Darrell D.; and Shimp, David A., 4,339,369, Cl. 523-414.000.

Celenav Industries, Inc.: *See—*
Leuchter, Fred A., Jr., 4,339,198, Cl. 356-144.000.

Central Glass Company, Limited: *See—*
Ueda, Kazuo, 4,339,257, Cl. 65-60.500.

Centro Cororation: *See—*
Benjamin, Harry L., 4,338,723, Cl. 33-174.00L.

Chafetz, Harry: *See—*
Hammond, Kenneth G.; and Chafetz, Harry, 4,339,336, Cl. 252-34.000.

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Roberts, Harry H.; and Cote, Raymond A., 4,339,041, Cl. 206-611.000.
Chang, Mike S. H., to Pitney Bowes, Inc. Humidity resistant photoconductive plate containing treated CdSSe. 4,339,519, Cl. 430-135.000.
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Chase, Brian D.: *See—*
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Chasek, Norman E. Automatic method for advantageously trading signal distortion for improved noise threshold in frequency modulated receivers. 4,339,828, Cl. 455-205.000.
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Krueger, Robert H.; Zambrow, John L.; and Cheadle, Brian E., 4,338,997, Cl. 165-134.00R.
Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, to L.G.T Laboratoire General des Telecommunications. Device for power amplification of a composite television signal. 4,339,773, Cl. 358-184.000.
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Cheng, Paul J., to Phillips Petroleum Company. Carbon black manufacture. 4,339,422, Cl. 423-456.000.
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Murmann, Gunter, 4,339,643, Cl. 200-159.00A.
Chevron Research Company: *See—*
King, William F., 4,339,461, Cl. 424-330.000.
Chichester, S. Tebbs, Jr. Fastener assembly. 4,338,755, Cl. 52-484.000.
Chino, Yasuyoshi; and Miyaguchi, Akinori, to Nippon Zeon Co., Ltd. Modified cyclopentadiene resins, process for preparing the same, and a composition for printing ink containing said modified resins as vehicle component. 4,339,367, Cl. 525-131.000.
Chio, Shiu-Shin, to RCA Corporation. Shank diamond cleaning. 4,339,281, Cl. 134-1.000.
Choi, John I.; Kurtz, Bruce E.; and Omelian, Anatoli, to Allied Corporation. Recovery of soluble alumina values from alumina bearing ores. 4,339,415, Cl. 423-126.000.
Christe, Karl O.; and Wilson, William W., to United States of America, Navy. Peroxonium salts. 4,339,423, Cl. 423-462.000.
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Christopher, Glenn B., to Jet Research Center, Inc. Method of manufacture of powdered metal casing. 4,338,713, Cl. 29-420.500.
Chrysler Corporation: *See—*
Lennis, Ralph J.; and Handy, Ralph L., 4,338,895, Cl. 123-146.50A.
Smith, Robert H., 4,338,966, Cl. 137-596.170.
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Chukhno, Vladimir A.: *See—*
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Psaila, Alexander; and Kessler, Katerina, 4,339,523, Cl. 430-239.000.
Rosner, Manfred, 4,339,618, Cl. 568-937.000.
Ciba-Geigy Corporation: *See—*
Burri, Peter, 4,339,385, Cl. 548-409.000.
Ehrenfreund, Josef, 4,339,460, Cl. 424-322.000.
Fringeli, Werner; and Lauton, Alain, 4,339,238, Cl. 8-527.000.
Green, George E.; and Irving, Edward, 4,339,567, Cl. 528-102.000.
Gutekunst, Ferdinand; Lehmann, Hans; and Schmid, Rolf, 4,339,571, Cl. 528-361.000.
Luthi, Christian; Meyer, Hans R.; and Weber, Kurt, 4,339,393, Cl. 260-459.00A.
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Wehner, Wolfgang; Michaelis, Klaus-Peter; and Schneider, Rainer, 4,339,383, Cl. 548-419.000.
Cillario, Lorenzo, to Ferrero S.p.A. Pack for confectionery products. 4,339,033, Cl. 206-216.000.
Cipolla, Thomas M.: *See—*
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Circom, Inc.: *See—*
Bednarz, John J.; Moser, Phillip J.; and Rosenberg, Roger L., 4,339,811, Cl. 367-96.000.
Clark Equipment Company: *See—*
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Clark, Ian S. R.; and Baltrukovicz, Benjamin J., to International Nickel Company, Inc., The. Process for producing metal powders having low oxygen content. 4,339,401, Cl. 264-11.000.
Clark, Wallace, to Oncor Corporation. Progressing cavity motor governing system. 4,339,007, Cl. 175-107.000.
Claytor, Bette. Humidifying aid. 4,338,859, Cl. 98-105.000.
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Clecak, Nicholas J.: *See—*
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Kosugi, Yukio; Ikebe, Jun; Takakura, Kintomo; and Kumagai, Yoriaki, 4,338,945, Cl. 128-421.000.
Cluniat, Claude: *See—*
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Coalson, Richard L.: *See—*
Becher, David Z.; Christenson, Roger M.; Coalson, Richard L.; Pierce, Percy E.; and Schimmel, Karl F., 4,339,365, Cl. 523-400.000.
Cobler, John A.: *See—*
Schulz, Johann G. D.; and Cobler, John A., 4,339,346, Cl. 252-311.500.
Cochran, Donald D., to National Can Corporation. Apparatus and method for removing pressure sensitive sealing tape from containers. 4,338,767, Cl. 53-492.000.
Coen, Robert. Nursing bottle. 4,339,046, Cl. 215-11.00B.
Coffey, Freylon B.; and Cywinski, Norbert F., to El Paso Products Company. Treatment of byproduct stream from adipic acid manufacture. 4,339,596, Cl. 560-204.000.
Cogan, Adrian: *See—*
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Cohen, Abraham B.: *See—*
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Cohen, Stanley N.; and Boyer, Herbert W., to Leland Stanford Junior University, The Board of Trustees of. Biologically functional molecular chimeras. 4,339,538, Cl. 435-253.000.
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Colgate-Palmolive Company: *See—*
Gaffar, Abdul, 4,339,430, Cl. 424-54.000.
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Samour, Carlos M.; and Vida, Julius A., 4,339,454, Cl. 424-254.000.
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Collins, William J. Entrance tube for a sampler for molten material. 4,338,841, Cl. 73-863.520.
Collins, William J. Sampler for molten material and entrance tube therefor. 4,338,842, Cl. 73-863.520.
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Combi Co., Ltd.: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 4,339,149, Cl. 297-250.000.
Commercial Shearing, Inc.: *See—*
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Commonwealth Scientific and Industrial Research Organization: *See—*
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Compagnie Francaise d'Etudes et de Construction "Technip": *See—*
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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Compagnie Industrielle Radioelectrique: *See—*
Grosvernier, Claude, 4,339,044, Cl. 209-564.000.
Computer Power Systems Corp.: *See—*
Kalbach, John F., 4,339,779, Cl. 361-33.000.
Conery, William J.; and Kiplinger, Terry L., to McNeil Corporation. Motor control housing and junction box for a submersible pump. 4,339,231, Cl. 417-40.000.
Connolly, Walter L.; and Ray, Harold T., to Grove Valve and Regulator Company. Integral end closure and hub for valve body and method of forming same. 4,339,112, Cl. 251-367.000.
Consolidation Coal Company: *See—*
May, Francis A., 4,339,161, Cl. 308-187.100.
Consortium fur Elektrochemische Industrie GmbH: *See—*
Sauter, Fritz; Eberle, Otto; Suss, Beate; and Weissgerber, Rudolf, 4,339,455, Cl. 424-263.000.
Container Corporation of America: *See—*
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Corben, Leo D.; and Falxa, Martin L., to Polaroid Corporation. Novel photosensitive silver halide emulsion and method of preparing same. 4,339,532, Cl. 430-567.000.
Corbett, Marshall J.; and Salina, Salvatore C., to Grumman Aerospace Corporation. Production of synthetic hydrocarbons from air, water and low cost electrical power. 4,339,547, Cl. 518-728.000.
Corbin, Wellington S. Bore illuminating device. 4,339,200, Cl. 356-241.000.
Corning Glass Works: *See*—
Aggarwal, Ishwar D.; and Randall, Eric N., 4,339,173, Cl. 350-96.300.
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,339,540, Cl. 501-3.000.
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Cotton Incorporated: *See*—
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Cowfer, Joseph A.; Eden, Jamal S.; and Magistro, Angelo J., to B. F. Goodrich Company, The. Copper-catalyzed fluid-bed ethylene oxyhydrochlorination process. 4,339,620, Cl. 570-243.000.
Cox, Nathan. Fuel charge preheater. 4,338,906, Cl. 123-545.000.
Cox, Roy L., to Catricola, Frank, a part interest. Theft deterent lock. 4,338,806, Cl. 70-417.000.
Coxhill, Major, to Allis-Chalmers Corporation. Lifter cage for asphalt plant, dryers and drum mixers. 4,338,732, Cl. 34-135.000.
Craft, James A.; and Okcuoglu, Selahattin A., to International Business Machines Corporation. Ribbon cartridge loading mechanism. 4,339,210, Cl. 400-208.000.
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Critikon, Inc.: *See*—
Saliga, Thomas V., 4,338,951, Cl. 128-695.000.
Cronmiller, Clifford P. Method and apparatus for a bridge plug anchor assembly for a subsurface well. 4,339,000, Cl. 166-295.000.
Croslin, Michael E. Method for performing non-invasive blood pressure and pulse rate measurements. 4,338,949, Cl. 128-677.000.
Cross, Peter E.; and Dickinson, Roger P., to Pfizer Inc. (Imidazolylmethyl)pyridine compounds as thromboxane synthetase inhibitors. 4,339,583, Cl. 546-256.000.
Crothers, Charles J., to Thermacon Industries, Inc. Panel and insulation system. 4,338,756, Cl. 52-539.000.
Croul, Richard D. Surfing slide. 4,339,122, Cl. 272-56.50R.
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Curto, Nicholas J., to Owens-Illinois, Inc. Method of forming blown polyethylene terephthalate containers. 4,339,409, Cl. 264-509.000.
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Czarny, Alex G. Amusement device for creating an illusion. 4,339,120, Cl. 272-8.00R.
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D. B. D. Drilling, Inc.: *See*—
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D'Agostino, Vincent F.; and Lee, Joseph Y., to Rai Research Corporation. Gamma radiation grafting process for preparing separator membranes for electrochemical cells. 4,339,473, Cl. 427-44.000.
Dahlhaus, Peter; Steinfeld, Horst E.; and Striepeke, Wilhelm, to Estel Hoesch Werke AG. Rail mounting system. 4,339,077, Cl. 238-349.000.
Dahms, Francis A., to Emhart Industries, Inc. Glassware forming apparatus. 4,339,264, Cl. 65-239.000.
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Daikin Kogyo Co., Ltd.: *See*—
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Daimler-Benz Aktiengesellschaft: *See*—
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Damon, Neil F., to Augat Inc. Method for fabricating a light emitting diode display socket. 4,338,717, Cl. 29-839.000.
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Dany, Jean, to Essilor International "Cie Generale d'Optique". Eyeglass frame having open rims closed by self-locking screw assemblies with dog clutch means. 4,339,179, Cl. 351-153.000.
Dardi, Louis E.; and Shankar, Srinivasan, to Howmet Turbine Components Corporation. Superalloy coating composition with oxidation and/or sulfidation resistance. 4,339,509, Cl. 428-632.000.
Darlington, Rex F. Compound bow with center tension pulley. 4,338,910, Cl. 124-24.00R.
d'Arras, Philippe, to Societe Anonyme dite COUPAX. Meat tendering device. 4,338,701, Cl. 17-25.000.
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Link, William T.; and Hobson, Stephen, 4,339,181, Cl. 353-27.00R.
Daussan, Andre: *See*—
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Daussan, Jean-Charles; Daussan, Gerard; and Daussan, Andre, to Daussan et Compagnie. Heat insulating lining for metallurgical vessels. 4,339,115, Cl. 266-280.000.
Davies, Frank H., to Lawson Paper Converters Limited. Carton having integrally formed supplementary components. 4,339,070, Cl. 229-52.00B.
Daville, Helenne. Incontinence pants. 4,338,939, Cl. 128-286.000.
Davison, Alan B.; and Lewis, Wayne J., to NCR Corporation. Memory system wherein individual bits may be updated. 4,339,804, Cl. 364-900.000.
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Dayton, John P. Connector. 4,339,166, Cl. 339-100.000.
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Dearman, Timothy C. Welding fixture for use in joining two tubular members. 4,338,712, Cl. 29-281.600.
De Bijl, Adrianus M. J.; and De Vogel, Johannes A., to U.S. Philips Corporation. Arrangement including a gas and/or vapor discharge lamp. 4,339,693, Cl. 315-225.000.
Decker, Harry J.; and Thorsteinson, Erlind M., to Union Carbide Corporation. Catalytic oxide of molybdenum, vanadium, niobium and optional 4th metal. 4,339,355, Cl. 252-464.000.
Decker, Lester H. Multiple section grain drill. 4,338,872, Cl. 111-56.000.
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Decre & Company: *See*—
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Strack, Hans, 4,339,420, Cl. 423-329.000.
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Kleemann, Axel; Lehmann, Bernd; and Klenk, Herbert, 4,339,591, Cl. 549-72.000.
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,339,578, Cl. 544-207.000.

Degussa Transnuklear GmbH: *See—*
Knackstedt, Hans-Gunther; Laug, Reiner; and Muller, Erhard, 4,339,411, Cl. 376-272.000.

Deike, Robert F., to Foresight Industries, Inc. Fencing system. 4,339,114, Cl. 256-12.500.

de Jonge, Jan H.; and Hogen Esch, Johannes H. L., to Vitatron Scientific B.V. Motor control system for use in an apparatus for performing tests and measurements on liquid samples. 4,339,699, Cl. 318-561.000.

Dekker, Lambert: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,339,344, Cl. 252-187.240.

Del Mar Avionics: *See—*
Woods, Donald C., 4,339,800, Cl. 364-417.000.

Delacruz, Moises A., to Rosemount Inc. Low power transmitter. 4,339,750, Cl. 340-870.370.

de Lamberterie, Bertrand: *See—*
Delassus, Jean; de Lamberterie, Bertrand; and Michelet, Jacques, 4,339,625, Cl. 373-158.000.

Dela Ruye, Jacques, to BFG Glassgroup. Manufacture of tinted glass. 4,339,541, Cl. 501-71.000.

Delassus, Jean; de Lamberterie, Bertrand; and Michelet, Jacques, to Institut de Recherches de la Siderurgie Francaise (IRSID). Electric induction furnace with electrically discontinued cooling screen. 4,339,625, Cl. 373-158.000.

Deljurie, Claude: *See—*
Mage, Jean-Claude; and Deljurie, Claude, 4,339,543, Cl. 501-134.000.

Delmas, Jean R., to Microlec, S.A. Optoelectronic displacement sensor. 4,338,722, Cl. 33-174.00L.

Dennison Manufacturing Company: *See—*
Bhatia, Sushil; and Shuman, Ralph J., 4,339,758, Cl. 346-1.100.

Dennison, Robert C.; and Walter, James M., to RCA Corporation. Synchronizing system with chroma parity detection. 4,339,770, Cl. 358-19.000.

Densmore, Neal W., to Joy Manufacturing Company. Monorail suspended conveyor system. 4,339,031, Cl. 198-864.000.

Desbiens, Richard L.; and Gile, Richard H., to Ex-Cell-O Corporation. High frequency control system using digital techniques. 4,339,700, Cl. 318-660.000.

Design Professionals Financial Corp.: *See—*
Okubo, Shigeo, 4,339,780, Cl. 361-147.000.

DeSoto, Inc.: *See—*
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,339,505, Cl. 428-514.000.

Detjen, Robert K., to McDonough Manufacturing Company. Log handling method and apparatus. 4,338,986, Cl. 144-39.000.

Deutsche Gold-und Silberscheide Anstalt Vormals Roessler: *See—*
Rutzen, Horst; and Rupilius, Wolfgang, 4,339,616, Cl. 568-867.000.

Devitt, John L.; Johnson, Douglas E.; and Willard, Robert S., to Sparton Corporation. Lead chloride battery plate. 4,338,978, Cl. 141-1.100.

De Vogel, Johannes A.: *See—*
De Bijl, Adrianus M. J.; and De Vogel, Johannes A., 4,339,693, Cl. 315-225.000.

Diamond Shamrock Corporation: *See—*
Solomon, Frank; and Grun, Charles, 4,339,325, Cl. 204-296.000.

Dickinson, Roger P.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,339,583, Cl. 546-256.000.

Diery, Helmut; Wagemann, Wolfgang; Bucking, Hans-Walter; Hille, Martin; and Wallhausser, Karl H., to Hoechst Aktiengesellschaft. Guanidinium compounds and their use as microbiocidal agents. 4,339,459, Cl. 424-316.000.

Dilger, Peter; Honig, Gunter; and Kauff, Helmut, to Robert Bosch GmbH. Fuel metering apparatus in an internal combustion engine. 4,338,900, Cl. 123-440.000.

Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; Jeffery, Thomas C.; and Dupre, Dallas D., III, to PPG Industries, Inc. Bipolar electrolyzer element. 4,339,323, Cl. 204-256.000.

Di Manno, Carl M. Throwing device. 4,339,138, Cl. 273-428.000.

DiMarzio, Alfred W., to General Electric Company. Non-deflection pressure switch apparatus. 4,339,011, Cl. 177-177.000.

Dimon, Donald F. Automatic tuning system for a narrow bandwidth communication. 4,339,829, Cl. 455-340.000.

Di Nocco, Dino: *See—*
Paudice, Ciro; Sassanelli, Vitantonio; Di Nocco, Dino; Pracilio, Francesco; and Casa, Nicolo', 4,339,259, Cl. 65-104.000.

Dion, Jean-Luc. Liquid crystal cell for acoustical imaging. 4,338,821, Cl. 73-603.000.

Discovision Associates: *See—*
Canino, Lawrence S., 4,339,814, Cl. 369-261.000.

Distugil: *See—*
Branlard, Paul; and Merle, Jean-Pierre, 4,339,372, Cl. 524-169.000.

Dittmar, Wilfried: *See—*
Franz, Reinhard; and Dittmar, Wilfried, 4,338,845, Cl. 84-1.100.

Doak, Kenneth W., to Atlantic Richfield Company. Polyvinyl chloride resin blends. 4,339,554, Cl. 525-63.000.

Dobbins, Donald J., to Barmag Barmer Maschinenfabrik AG. Yarn winding apparatus and method. 4,339,089, Cl. 242-18.00A.

Dobias, John J. Wrench. 4,338,834, Cl. 81-106.000.

Dockner, Toni; Frank, Anton; and Pommer, Ernst-Heinrich, to BASF Aktiengesellschaft. Imidazole-copper complex compounds and fungicides containing them. 4,339,448, Cl. 424-245.000.

Doering, Arlin B., to Minnesota Mining and Manufacturing Company. Moldable handle for disk pack assembly. 4,339,037, Cl. 206-444.000.

Doi, Keiichiro; Makita, Minoru; and Kowada, Masaaki, to Sharp Kabushiki Kaisha. Cooking operation announcement means of microwave oven. 4,339,646, Cl. 219-10.55B.

Doi, Yoshio: *See—*
Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,339,463, Cl. 424-35.000.

Dolan, Daniel F.: *See—*
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., 4,338,784, Cl. 60-274.000.

Dolan, John E. Method of varying turbine output of a supercritical-pressure steam generator-turbine installation. 4,338,789, Cl. 60-652.000.

Donnally, Robert B.; and Trevithick, Mark W., to Dresser Industries, Inc. Power shovel crowd drive assembly. 4,339,225, Cl. 414-690.000.

Donnelly, Alice S. Versatile post mastectomy device. 4,338,946, Cl. 128-481.000.

Dorr-Oliver Incorporated: *See—*
Leon, Albert M., 4,338,887, Cl. 122-4.00D.

Dow Chemical Company, The: *See—*
Peil, Charles A.; and McLaren, John W., 4,339,040, Cl. 206-599.000.

Dow, Ray A. Bag holding device and process. 4,338,979, Cl. 141-10.000.

Doyle, Thomas E.; Hauser, Daniel; Hayes, Michael D.; and Martin, David C., to Omark Industries, Inc. Method for double end stud welding. 4,339,653, Cl. 219-99.000.

Dresser Industries, Inc.: *See—*
Donnally, Robert B.; and Trevithick, Mark W., 4,339,225, Cl. 414-690.000.

Drillco Devices Limited: *See—*
Lacey, Patrick J., 4,339,217, Cl. 411-55.000.

Dron, Sylvain M., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, "S.N.E.C.M.A.". Linear displacement transducer. 4,339,739, Cl. 336-136.000.

Drumheller, Dale G.; Schell, Robert M.; and Drumheller, Edward O. Auxiliary precombustion chamber and combustion distributor for an internal combustion engine. 4,338,897, Cl. 123-267.000.

Drumheller, Edward O.: *See—*
Drumheller, Dale G.; Schell, Robert M.; and Drumheller, Edward O., 4,338,897, Cl. 123-267.000.

D'Silva, Themistocles D. J.; and Hodakowski, Leonard E., to Union Carbide Corporation. Novel oxime-phosphate compounds. 4,339,444, Cl. 424-202.000.

Dunn, Philip, to Philbag Co., Inc. Accessory case for a wheel chair. 4,339,061, Cl. 224-42.420.

Du Pont de Nemours, E. I., and Company: *See—*
Barnette, Willie J.; Henry, Farland E.; and Rapoport, Morris, 4,339,395, Cl. 260-465.80R.
Bratt, Martin D.; and Cohen, Abraham B., 4,339,525, Cl. 430-271.000.
Hill, Martin J., 4,339,527, Cl. 430-322.000.
Levitt, George, 4,339,266, Cl. 71-92.000.
Levitt, George, 4,339,267, Cl. 71-92.000.

Dupre, Dallas D., III: *See—*
Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; Jeffery, Thomas C.; and Dupre, Dallas D., III, 4,339,323, Cl. 204-256.000.

Durand, Pierre; and Jouffroy, Guy, to Societe Chimique des Charbonnages - CdF Chimie. Apparatus for reducing the chances of ignition and explosion due to the decomposition of high-pressure industrial process gases. 4,339,412, Cl. 422-117.000.

Duschek, Rudolf: *See—*
Mitzel, Wilhelm; Bernardi, Herbert; and Duschek, Rudolf, 4,339,221, Cl. 414-114.000.

Duttarer, Ralph M.; Estkowski, Michael H.; and Smith, Russell P., to Clark Equipment Company. Vehicle brake system. 4,339,154, Cl. 303-3.000.

Duyster, Hubert; Voigt, Gunter; and Budan, Gerhard, to Kali und Salz Aktiengesellschaft. Binding materials based upon magnesium compounds. 4,339,274, Cl. 106-106.000.

Dybas, Richard A.: *See—*
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.

Dynamics Corporation of America: *See—*
Valbona, Bruno M.; and Pound, William C., 4,339,639, Cl. 200-52.00R.

Dynamit Nobel Aktiengesellschaft: *See—*
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,339,499, Cl. 428-373.000.

Dynapol: *See—*
Wang, Patricia C.; and Wingard, Robert E., Jr., 4,339,237, Cl. 8-405.000.

E. R. Squibb & Sons, Inc.: *See—*
Ondetti, Miguel A.; and Cushman, David W., 4,339,600, Cl. 562-426.000.
Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, 4,339,535, Cl. 435-119.000.

Eagar, Robert G., Jr.: *See—*
Totten, George E.; Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,339,581, Cl. 546-14.000.

Early, Scott H.; and Savidge, David M., to Bell Telephone Laboratories, Incorporated. Button illumination for repertory dialer with low battery voltage indication. 4,339,632, Cl. 179-90.00B.

East, Anthony J.: *See—*
Calundann, Gordon W.; Charbonneau, Larry F.; and East, Anthony J., 4,339,375, Cl. 524-602.000.

Eastman Kodak Company: *See—*
Harvey, Donald M., 4,339,193, Cl. 354-288.000.

Eastman Technology, Inc.: *See—*
Lemke, James U.; and Bixby, James A., 4,339,775, Cl. 360-10.000.

Eaton Corporation: *See—*
Amlani, Kish; Zink, Frederick J.; Morgan, Craig; and Ellwood, Thomas, 4,338,825, Cl. 73-862.650.

Eberle, Otto: *See—*
Sauter, Fritz; Eberle, Otto; Suss, Beate; and Weissgerber, Rudolf, 4,339,455, Cl. 424-263.000.

Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, to Sulzer Morat GmbH. Thread guidance system. 4,338,799, Cl. 66-125.00R.

Economics Laboratory, Inc.: *See—*
Anderson, Richard C., 4,339,235, Cl. 8-108.00A.

Eden, Jamal S.: *See—*
Cowfer, Joseph A.; Eden, Jamal S.; and Magistro, Angelo J., 4,339,620, Cl. 570-243.000.

Egawa, Mitsuo: *See—*
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, 4,339,580, Cl. 544-360.000.

Egg, Hans-Jakob: *See—*
Benz, Gottlieb; and Egg, Hans-Jakob, 4,339,116, Cl. 269-132.000.

Eggert, Walter S., Jr., to Budd Company, The. Railway truck adaptable to receive a common primary suspension and variable journal bearings. 4,338,865, Cl. 105-202.000.

Eguchi, Tamiyuki; and Izumi, Michinobu, to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha. Tubular membrane separation apparatus end joint seal. 4,339,334, Cl. 210-433.200.

Ehrenfreund, Josef, to Ciba-Geigy Corporation. Pesticidal N-[4-(3'-bromoallyloxy)-phenyl]-N'-benzoyl ureas. 4,339,460, Cl. 424-322.000.

Eidetic Images, Inc.: *See—*
Haines, Kenneth A., 4,339,168, Cl. 350-3.690.

Eilers, Carl; and Fockens, Pieter, to Zenith Radio Corporation. TV Sound Transmission system. 4,339,772, Cl. 358-144.000.

Ekstrom, Stig O. M. Manufacture of bitumen pipes. 4,339,291, Cl. 156-195.000.

El Paso Products Company: *See—*
Coffey, Freylon B.; and Cywinski, Norbert F., 4,339,596, Cl. 560-204.000.

Elbel, Karl, to Heinrich Lippert GmbH, Firma. Grinding tool metal machining. 4,338,748, Cl. 51-206.00R.

Elder, James E.: *See—*
Van Vliet, Jasper A.; and Elder, James E., 4,338,885, Cl. 119-96.000.

Electric Power Research Institute, Inc.: *See—*
Rhines, Archie E.; and Hugg, Steven B., 4,339,719, Cl. 324-446.000.

Elliott, William H. Electrical container. 4,339,637, Cl. 200-51.090.

Ellis, John C., Jr. Distillation apparatus. 4,339,307, Cl. 202-176.000.

Ellis, Victor E. H., to Rolls Royce Limited; and Renishaw Electrical Limited. Probe having passive means transmitting an output signal by reactive coupling. 4,339,714, Cl. 324-207.000.

Ellson, Robert A.: *See—*
Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellson, Robert A., 4,338,826, Cl. 73-864.620.

Ellwood, Thomas: *See—*
Amlani, Kish; Zink, Frederick J.; Morgan, Craig; and Ellwood, Thomas, 4,338,825, Cl. 73-862.650.

Elmes, Terence D. J.; and McGrail, Patrick T., to Imperial Chemical Industries Limited. Photographic film bases. 4,339,531, Cl. 430-535.000.

Elmwood Sensors Inc.: *See—*
Colavecchio, Robert J., 4,339,738, Cl. 337-354.000.

Elsasser, Heinrich: *See—*
Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.

Emhart Industries, Inc.: *See—*
Dahms, Francis A., 4,339,264, Cl. 65-239.000.
Evans, William J.; and Henderson, Dennis R., 4,339,786, Cl. 361-433.000.
Hronchek, James A., 4,339,649, Cl. 219-10.55B.
Solovieff, Paul G., 4,338,804, Cl. 70-134.000.

Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R.; and Flasck, Richard A., 4,339,255, Cl. 65-32.000.

Engelhard Minerals & Chemicals Corporation: *See—*
Pitts, Frank; Tiethof, Jack A.; and Burns, Robert A., 4,339,352, Cl. 252-449.000.

Engelmann, John A., to Veda, Inc. Sewage treatment method and apparatus. 4,339,265, Cl. 71-9.000.

English Clays Lovering Pochin & Company, Ltd.: *See—*
Windle, William; Lofthouse, Charles H.; and Shergold, Howard L., 4,339,042, Cl. 209-5.000.

Englund, Richard L. Remote reading, liquid parameter measuring device and improved pump. 4,338,809, Cl. 73-1.00H.

Enneking, Heinrich; Schubert, Gunter; Hauger, Ludwig; and Mladek, Rolf, to Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Device for depositing cable into a receiving container. 4,339,091, Cl. 242-47.000.

Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,339,585, Cl. 546-242.000.

Enomoto, Yutaka: *See—*
Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, 4,338,943, Cl. 128-344.000.

Erdmann, Jurgen: *See—*
Buchholz, Karl-Otto; Erdmann, Jurgen; and Fetzer, Gunter, 4,339,660, Cl. 250-221.000.

Ericsson, Ronald J., to Gametrics Limited. Method of increasing the incidence of female offspring. 4,339,434, Cl. 424-105.000.

Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., to Astra Lakemedel Aktiebolag. Method for combating virus infection. 4,339,445, Cl. 424-212.000.

Eriksson, Erik F. Pulp refining apparatus with adjustable treating gap. 4,339,084, Cl. 241-37.000.

Ernst, Horst M.: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,339,157, Cl. 308-6.00C.

Erwin Sick GmbH Optik-Elektronik: *See—*
Buchholz, Karl-Otto; Erdmann, Jurgen; and Fetzer, Gunter, 4,339,660, Cl. 250-221.000.

Esper, Friedrich: *See—*
Friese, Karl-Hermann; and Esper, Friedrich, 4,339,320, Cl. 204-195.00S.

Essilor International "Cie Generale d'Optique": *See—*
Dany, Jean, 4,339,179, Cl. 351-153.000.

Estel Hoesch Werke AG: *See—*
Dahlhaus, Peter; Steinfeld, Horst E.; and Striepeke, Wilhelm, 4,339,077, Cl. 238-349.000.

Estkowski, Michael H.: *See—*
Duttarer, Ralph M.; Estkowski, Michael H.; and Smith, Russell P., 4,339,154, Cl. 303-3.000.

Euteco Impianti S.p.A.: *See—*
Ligorati, Ferdinando; and Sartorio, Emanuele, 4,339,605, Cl. 568-383.000.

Evans, William J.; and Henderson, Dennis R., to Emhart Industries, Inc. Anchoring means for an electrical device. 4,339,786, Cl. 361-433.000.

Ewing, Jerry L.: *See—*
Husby, Donald E.; Ewing, Jerry L.; and Johnson, William H., 4,339,789, Cl. 362-259.000.

Ex-Cell-O Corporation: *See—*
Desbiens, Richard L.; and Gile, Richard H., 4,339,700, Cl. 318-660.000.

Exxon Research & Engineering Co.: *See—*
Alexander, P. Todd; and Roth, Kurt H., 4,339,211, Cl. 400-248.000.
Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., 4,339,354, Cl. 252-455.00Z.
Jacobson, Allan J.; Cheng, Kent H.; and Whittingham, M. Stanley, 4,339,424, Cl. 423-606.000.
Luebbe, Ray H., Jr.; Miro, Frank; and Palermiti, Frank M., 4,339,504, Cl. 428-513.000.

Ezure, Yoji: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,339,585, Cl. 546-242.000.

Fachbach, Heinz: *See—*
Kirchweger, Karl; Fachbach, Heinz; and Greier, Josef, 4,338,889, Cl. 123-198.00E.

Facom: *See—*
Brihier, Gerard C. C., 4,339,709, Cl. 324-61.00R.

Fahim, Mostafa S., to University of Missouri, The Curators of the. Injectable male animal sterilant for selectively controlling the function of testes. 4,339,438, Cl. 424-145.000.

Faktor, Marc M.; and Haigh, John, to Post Office, The. Semiconductor materials. 4,339,302, Cl. 156-605.000.

Falxa, Martin L.: *See—*
Corben, Leo D.; and Falxa, Martin L., 4,339,532, Cl. 430-567.000.

Fankhauser, Peter: *See—*
Witschi, Heinz; and Fankhauser, Peter, 4,338,757, Cl. 52-699.000.

Farine, Jean-Claude: *See—*
Schultess, Adrian; and Farine, Jean-Claude, 4,339,421, Cl. 423-330.000.

Farrell, Warren M., Jr.: *See—*
Farrell, Warren M., Sr.; and Farrell, Warren M., Jr., 4,338,839, Cl. 83-620.000.
Farrell, Warren M., Sr.; and Farrell, Warren M., Jr., 4,338,840, Cl. 83-622.000.

Farrell, Warren M., Sr.; and Farrell, Warren M., Jr. Tire cutting machine. 4,338,839, Cl. 83-620.000.

Farrell, Warren M., Sr.; and Farrell, Warren M., Jr. Tire cutting machine. 4,338,840, Cl. 83-622.000.

Fats Co., Ltd.: *See—*
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.

Faulkner, Lynn; and Stulen, Foster B., to Battelle Development Corporation. Acoustic degasification of pressurized liquids. 4,339,247, Cl. 55-15.000.

FBC Limited: *See—*
Baillie, Alister C.; Wright, Brian J.; and Wright, Kenneth, 4,339,443, Cl. 424-200.000.

Feher, Kamilo. Filter. 4,339,724, Cl. 328-164.000.

Feldstein, Nathan. Dispersions for activating non-conductors for electroless plating. 4,339,476, Cl. 427-98.000.

Feres, Vaclav. Column for heat and mass transfer. 4,339,398, Cl. 261-89.000.

Fernstrum, Paul W., to R. W. Fernstrum & Co. Underwater outboard marine heat exchanger. 4,338,993, Cl. 165-44.000.

Ferranti Limited: *See—*
Leather, Russell A., 4,339,172, Cl. 350-96.210.
Ferrero S.p.A.: *See—*
Cillario, Lorenzo, 4,339,033, Cl. 206-216.000.
Fetzer, Gunter: *See—*
Buchholz, Karl-Otto; Erdmann, Jurgen; and Fetzer, Gunter, 4,339,660, Cl. 250-221.000.
Fiberdome Incorporated: *See—*
Wollin, Roger W., 4,339,024, Cl. 193-34.000.
Fiberglas Canada, Inc.: *See—*
MacPherson, Edwin J.; and Frenette, Daniel A., 4,339,361, Cl. 527-303.000.
FICO Fischer & Co. Maschinenbau GmbH: *See—*
Lange, Karl-Heinz, 4,338,779, Cl. 59-25.000.
Fields, Ellis K.: *See—*
Udovich, Carl A.; and Fields, Ellis K., 4,339,595, Cl. 560-76.000.
Fink, Allen H., to UOP Inc. Cogeneration process linking FCC regenerator and power plant turbine. 4,338,788, Cl. 60-648.000.
First National Packaging Co., Inc.: *See—*
Mykleby, Laurie G., 4,339,039, Cl. 206-523.000.
Fisher, Gerald M.; and Maget, Henri J. R., to Varian Associates, Inc. Solar pond power plant. 4,339,626, Cl. 136-248.000.
Fishter, Robert E.: *See—*
Lada, Henry; and Fishter, Robert E., 4,339,282, Cl. 134-3.000.
Fitoussi, Richard; and Musikas, Claude, to Commissariat a l'Energie Atomique. Uranium recovery process. 4,339,416, Cl. 423-10.000.
Fives-Cail Babcock: *See—*
Mercier, Andre, 4,339,280, Cl. 127-56.000.
Flasck, Richard A.: *See—*
Ovshinsky, Stanford R.; and Flasck, Richard A., 4,339,255, Cl. 65-32.000.
Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, to Roquette Freres. Process for manufacturing 5-hydroxymethylfurfural. 4,339,387, Cl. 549-488.000.
Flecher, Pierre; and Kofler, Hansjorg, to BBC Brown, Boveri & Company, Ltd. Sorption pump for a turbogenerator rotor with superconductive excitation winding. 4,339,680, Cl. 310-62.000.
FMC Corporation: *See—*
Hill, Jerry M.; and Carter, Ronald W., 4,338,818, Cl. 73-462.000.
Plummer, Ernest L.; and Palmere, Raymond M., 4,339,457, Cl. 424-274.000.
Fockens, Pieter: *See—*
Eilers, Carl; and Fockens, Pieter, 4,339,772, Cl. 358-144.000.
Fogarty, Thomas J. Dilatation catherter apparatus. 4,338,942, Cl. 128-344.000.
Ford, Azel R.; and Ford, David W., to D. B. D. Drilling, Inc. Well notching tool. 4,339,008, Cl. 175-272.000.
Ford, Charles; Gill, Arthur, Jr.; Smith, John W.; and Freeman, Louis L., Jr, to ACF Industries, Incorporated. Tank car coating apparatus. 4,339,078, Cl. 239-1.000.
Ford, David W:: *See—*
Ford, Azel R.; and Ford, David W., 4,339,008, Cl. 175-272.000.
Foreman, Richard L.: *See—*
Georgi, Heinz W.; Knute, Wallace L.; and Foreman, Richard L., 4,338,932, Cl. 128-214.00E.
Foresight Industries, Inc.: *See—*
Deike, Robert F., 4,339,114, Cl. 256-12.500.
Foster, Perry A., Jr.: *See—*
Peterson, Richard W.; and Foster, Perry A., Jr., 4,339,316, Cl. 204-243.00R.
Foster Wheeler Energy Corporation: *See—*
Ashdown, Ronald A., 4,338,960, Cl. 137-240.000.
Fowkes, Ronald; and Harding, Geoffrey G., to Lucas Industries Limited. Electrically driven vehicles. 4,339,015, Cl. 180-65.00R.
Fralick, Stanley C.: *See—*
Hedges, Richard A.; Shockley, David L.; Fralick, Stanley C.; and Kane, Paul H., 4,339,798, Cl. 364-412.000.
Frame, Douglas J., to C & H Combustion. High temperature gate valve with fused silica blade. 4,338,963, Cl. 137-375.000.
Franck, Heinz-Gerhard: *See—*
Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Kohler, Helmut; and Louis, Heinrich, 4,339,328, Cl. 208-8.0LE.
Frank, Anton: *See—*
Dockner, Toni; Frank, Anton; and Pommer, Ernst-Heinrich, 4,339,448, Cl. 424-245.000.
Frank, Wilhelm. Combined rolling shutter and ventilating box. 4,338,996, Cl. 165-57.000.
Franz, James H., to Westinghouse Electric Corp. Propulsion motor control apparatus and method. 4,339,697, Cl. 318-341.000.
Franz, Reinhard; and Dittmar, Wilfried, to Franz, Reinhard. System for expanding the dynamic volume range of electronic musical instruments. 4,338,845, Cl. 84-1.100.
Frauenberger, Dennis M. Valve service apparatus. 4,338,981, Cl. 141-85.000.
Frechin, Jean-Paul. Safety device for crampons, and crampons equipped therewith. 4,338,733, Cl. 36-7.300.
Frederick, George T.: *See—*
Benoy, David C.; and Frederick, George T., 4,339,092, Cl. 242-56.00R.
Freed, Meier E., to American Home Products Corporation. 2,6-Bis-(pyrrolopyrazinyl)pyrazines. 4,339,579, Cl. 544-349.000.
Freeman, Louis L., Jr: *See—*
Ford, Charles; Gill, Arthur, Jr.; Smith, John W.; and Freeman, Louis L., Jr, 4,339,078, Cl. 239-1.000.
Frenette, Daniel A.: *See—*
MacPherson, Edwin J.; and Frenette, Daniel A., 4,339,361, Cl. 527-303.000.
Freyn, Fritz: *See—*
Pomfret, Colin T.; and Freyn, Fritz, 4,338,893, Cl. 123-90.160.
Friend, Manuel N.: *See—*
Schwebel, Paul R.; and Friend, Manuel N., 4,338,980, Cl. 141-18.000.
Friese, Karl-Hermann; and Esper, Friedrich, to Robert Bosch GmbH. Heated gas composition sensor structure. 4,339,320, Cl. 204-195.00S.
Frilette, Vincent J.: *See—*
Weisz, Paul B.; and Frilette, Vincent J., 4,339,353, Cl. 252-455.00Z.
Fringeli, Werner; and Lauton, Alain, to Ciba-Geigy Corporation. Stable aqueous formulations of stilbene fluorescent whitening agents. 4,339,238, Cl. 8-527.000.
Frisch, David C.; and Weber, Wilhelm, to Kollmorgen Technologies Corporation. Radiation stress relieving of sulfone polymer articles. 4,339,303, Cl. 156-629.000.
Fritzsche Dodge & Olcott Inc.: *See—*
Willis, Brian J.; Lerner, David I.; and Barton, Derek H. R., 4,339,593, Cl. 560-70.000.
Fromm, Ingrid; and Unterberger, Hans, to Siemens Aktiengesellschaft. Method and a device for monitoring and minimizing light losses at a splicing location for glass fiber cables. 4,339,658, Cl. 250-227.000.
Frosch, Franz: *See—*
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,339,429, Cl. 424-49.000.
Fuji Electric Co., Ltd.: *See—*
Tanaka, Takeo; and Yamamoto, Osamu, 4,339,318, Cl. 204-195.00S.
Fuji Latex Co., Ltd.: *See—*
Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, 4,338,943, Cl. 128-344.000.
Fuji Photo Film Co., Ltd.: *See—*
Akimoto, Taizo, 4,339,517, Cl. 430-30.000.
Nakauchi, Kenji; and Terasita, Takaaki, 4,339,185, Cl. 354-31.000.
Fujii, Osamu: *See—*
Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, 4,339,143, Cl. 282-27.500.
Fujimoto, Hideo: *See—*
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.
Fujisawa, Kazuo: *See—*
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Fujisawa Pharmaceutical Company, Limited: *See—*
Hashimoto, Masashi; and Aratani, Matsuhiko, 4,339,449, Cl. 424-246.000.
Fujishige, Shoei: *See—*
Nakao, Yukimichi; and Fujishige, Shoei, 4,339,345, Cl. 252-309.000.
Shimizu, Toshimi; Fujishige, Shoei; and Okada, Akira, 4,339,360, Cl. 524-28.000.
Fujita, Junji. Spray booth assembly for washing or chemically treating objects of desired kind. 4,338,958, Cl. 134-104.000.
Fujita, Toshiji; Yamada, Chihiko; Terashima, Takeo; and Nojima, Masaki, to Toppan Printing Co., Ltd. Photography apparatus for television picture. 4,339,769, Cl. 358-6.000.
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, to Hitachi, Ltd. Desalting method of fuel oil. 4,339,330, Cl. 208-251.00R.
Fukai, Yoshikazu: *See—*
Adachi, Norihiko; Fukai, Yoshikazu; and Kanayama, Hisanori, 4,339,435, Cl. 424-115.000.
Fukami, Harukazu: *See—*
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, 4,339,580, Cl. 544-360.000.
Fukuda, Kunio: *See—*
Kasahara, Hideo; Fukuda, Kunio; and Suzuki, Hiroshi, 4,339,376, Cl. 524-116.000.
Furst, Raymond B., to Rockwell International Corporation. Inducer tip clearance and tip contour. 4,339,227, Cl. 415-213.00C.
Furusawa, Tomotaka: *See—*
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.
Futatsumori, Koji: *See—*
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G.A.O. Gesellschaft fuer Automation und Organisation mbH: *See—*
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Gabelman, George N., to Pitney Bowes Inc. Electrophotocopier roller assembly. 4,339,195, Cl. 355-3.0CH.
Gaddis, John H.: *See—*
Martin, Larry J.; and Gaddis, John H., 4,338,725, Cl. 33-174.00N.
Gaffar, Abdul, to Colgate-Palmolive Company. Antibacterial oral composition. 4,339,430, Cl. 424-54.000.
Gaffar, Abdul, to Colgate-Palmolive Company. Anticalculus oral composition. 4,339,431, Cl. 424-54.000.
Gaffney, Edward J. Bathtub aid for handicapped. 4,338,691, Cl. 4-562.000.
Gaiser, Willi: *See—*
Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.
Galloway, Robert D.: *See—*
Bull, Eric W.; and Galloway, Robert D., 4,339,718, Cl. 324-319.000.

Gametrics Limited: *See—*
Ericsson, Ronald J., 4,339,434, Cl. 424-105.000.

Garner, James W., to Grow Group, Inc. Process for the purification of gaseous effluent from industrial processes. 4,339,248, Cl. 55-89.000.

Garnjost, Kenneth D.; and Ballard, John S., to Moog Inc. Self-monitoring dual-spool servovalve. 4,338,965, Cl. 137-554.000.

Gaset, Antoine: *See—*
Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, 4,339,387, Cl. 549-488.000.

Gaskins, Thomas. Outdoor cooking grill. 4,338,912, Cl. 126-25.00A.

Gasper, Bertram: *See—*
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,339,499, Cl. 428-373.000.

Gautraud, Michael G., to Brunswick Corporation. Multi-graphic masking unit. 4,339,129, Cl. 273-54.00R.

Gawain, Theodore H.; and Biblarz, Oscar, to United States of America, Navy. Multistaged electrohydrodynamic (EHD) generator with parallel outputs. 4,339,678, Cl. 310-10.000.

Gebrueder Buehler AG: *See—*
Linzberger, Robert; Ketting, Leendert; and Heer, Ernst M., 4,339,083, Cl. 241-37.000.

Gebura, Stanley E.: *See—*
Terminiello, Michael A.; and Gebura, Stanley E., 4,338,982, Cl. 141-132.000.

GEFITEC S.A.: *See—*
Posso, Patrick P., 4,339,191, Cl. 354-269.000.

Gefter, Warren B.: *See—*
Marcus, Robert; Gefter, Warren B.; and Miller, Wallace T., 4,339,035, Cl. 206-370.000.

Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, to Volkswagenwerk Aktiengesellschaft. Method and apparatus for controlling the idling operation of a spark-ignited internal combustion engine. 4,338,899, Cl. 123-339.000.

Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., to Shape, Inc. Video cassette storage box. 4,339,162, Cl. 312-10.000.

Gelardi, Paul J.: *See—*
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,339,162, Cl. 312-10.000.

Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmuter, Shimshon, to Mego Afek Industrial Measuring Instruments. Inflatable-cell type body treating apparatus. 4,338,923, Cl. 128-24.00R.

General Electric Company: *See—*
Bailey, Cecil; Young, Albert C.; and Thold, Dezso D., 4,339,652, Cl. 219-95.000.
Balko, Edward N.; and Lawrance, Richard J., 4,339,322, Cl. 204-255.000.
Barber, William D.; Cipolla, Thomas M.; and Mundy, Joseph L., 4,339,745, Cl. 340-146.30F.
Barrett, David M.; Stivender, Paul M.; and Ueberfluss, Robert E., 4,339,825, Cl. 250-490.000.
Bower, Arnold B., Jr.; and Ojanen, Randall W., 4,339,006, Cl. 175-57.000.
Crawford, John G., 4,339,051, Cl. 220-66.000.
DiMarzio, Alfred W., 4,339,011, Cl. 177-177.000.
Hanson, James M.; and Bradley, Irving, 4,338,708, Cl. 29-25.130.
Hanson, James M.; Graf, Martin J.; and Bradley, Irving, 4,339,790, Cl. 362-267.000.
Jenkins, Thomas E., 4,339,408, Cl. 264-328.700.
Kelley, Fred W., 4,339,705, Cl. 323-210.000.
Lauroesch, Hugo C., 4,339,655, Cl. 219-121.0LJ.
Leach, John G.; and Koch, Robert E., 4,339,742, Cl. 337-279.000.
Matthews, Gerald N.; and Sanders, Frank H., 4,339,066, Cl. 228-183.000.
McQuay, Edgar E., 4,339,630, Cl. 174-152.00R.
McSparran, Lloyd W.; and Smith, Russell M., 4,339,704, Cl. 322-90.000.
Noeske, Heinz O., 4,339,641, Cl. 200-148.00R.
Park, John N.; and Steigerwald, Robert L., 4,339,671, Cl. 307-253.000.
Potter, Ralph M., 4,339,686, Cl. 313-221.000.
Ratterman, Ernest, 4,338,750, Cl. 51-281.00R.
Redington, Rowland W., 4,339,687, Cl. 313-402.000.
Seymour, Raymond K.; Murphy, Frank H.; and Vergnano, Lelio C., 4,339,642, Cl. 200-153.00G.
Stamp, Custis L., Jr.; and Herzog, Rollie R., 4,338,791, Cl. 62-160.000.
Wang, Jish M.; and McCary, Richard O., 4,339,760, Cl. 346-74.500.

General Electric Company Limited, The: *See—*
Bloodworth, Greville G.; and Manley, Martin H., 4,339,715, Cl. 324-252.000.
Greenhalgh, Keith, 4,339,740, Cl. 337-39.000.

General Foods Corporation: *See—*
Albaum, Joseph D.; Ponzoni, Ronald W.; and Johnson, Eric C., 4,339,451, Cl. 426-250.000.

General Motors Corporation: *See—*
Witherspoon, Romeo R.; and Meibuhr, Stuart G., 4,339,512, Cl. 429-206.000.

George Fischer Limited: *See—*
Benz, Gottlieb; and Egg, Hans-Jakob, 4,339,116, Cl. 269-132.000.

George Washington University: *See—*
Goldstein, Allan L.; McClure, John E.; and Wang, Su-Sun, 4,339,427, Cl. 424-1.000.

Georgi, Heinz W.; Knute, Wallace L.; and Foreman, Richard L., to IVAC Corporation. Method and apparatus for fluid flow control. 4,338,932, Cl. 128-214.00E.

Georgia-Pacific Corporation: *See—*
Smith, Frederick M.; and O'Dair, James R., 4,338,985, Cl. 144-34.00R.

Gerlach, Hans H.: *See—*
Kordulla, Hans; Gerlach, Hans H.; and Jansen, Dirk, 4,339,097, Cl. 244-3.160.

Gerresheim, Jost, to International Harvester Co. Tiltable fender for a tractor loader. 4,339,016, Cl. 180-89.170.

Gerry, Frank S.; and Wiggins, Wayne T., to SOHIO. Tie-layer for coextruded acrylonitrile copolymers. 4,339,502, Cl. 428-411.000.

Gerstmann, Joseph; and Vasilakis, Andrew D., to Advanced Mechanical Technology, Inc. High efficiency water heating system. 4,338,888, Cl. 122-16.000.

Gess, Larry C. Machine for producing packages with labels. 4,338,761, Cl. 53-137.000.

Gestra-Ksb Vertriebsgesellschaft mbH & Co. Kommanditgesellschaft: *See—*
Schittek, Friedrich; and Jahn, Volkmar, 4,339,075, Cl. 236-59.000.

Gibbs, Max A., to Halliburton Company. Sea buoy discharge manifold system. 4,339,002, Cl. 166-355.000.

Gifford, Richard L., to Brunswick Corporation. Oscillator system for fishing reel. 4,339,095, Cl. 242-84.21R.

Gile, Richard H.: *See—*
Desbiens, Richard L.; and Gile, Richard H., 4,339,700, Cl. 318-660.000.

Gill, Arthur, Jr.: *See—*
Ford, Charles; Gill, Arthur, Jr.; Smith, John W.; and Freeman, Louis L., Jr, 4,339,078, Cl. 239-1.000.

Gillam, Eric: *See—*
Grover, Rajeev K.; and Gillam, Eric, 4,339,272, Cl. 75-240.000.

Gillespie, Peter J., to United States of America, Energy. Containers for use in a self supporting assembly. 4,339,049, Cl. 220-23.400.

Gilligan, Patrick J.; and Merry, Ted G., to Pako Corporation. Photographic film insertion apparatus. 4,338,762, Cl. 53-244.000.

Gilman, Russell A. Adjustable torque limiting apparatus. 4,338,798, Cl. 464-23.000.

Gilmore, Thomas P., to Allis-Chalmers Corporation. Safety system for weed destroying apparatus operable to alternatively supply auxiliary power. 4,338,743, Cl. 47-1.300.

Gilmore, Thomas P., to Allis-Chalmers Corporation. Safety system for weed destroying apparatus. 4,338,744, Cl. 47-1.300.

Gilmore, William J., to Acco Industries Inc. Termination anchorage. 4,339,213, Cl. 403-316.000.

Giraudi, Walter: *See—*
Radaelli, Dario; and Giraudi, Walter, 4,339,082, Cl. 239-585.000.

Gittings, Neil A. Board game having triangular playing spaces. 4,339,136, Cl. 273-242.000.

Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., to Exxon Research & Engineering Co. Hydrocarbon conversion catalysts. 4,339,354, Cl. 252-455.00Z.

Glaenzer Spicer: *See—*
Orain, Michel A., 4,338,796, Cl. 464-111.000.

Glaser, David; and Whelchel, Charles J., to Lucitron, Inc. Flat-panel display and method of manufacture. 4,339,482, Cl. 428-13.000.

Glynn, Thomas A.: *See—*
Meyers, Elwood J.; and Glynn, Thomas A., 4,339,737, Cl. 335-272.000.

GMSR Ortho Enterprises, Inc.: *See—*
McNamara, Daniel E.; and Sinatra, Gerald, 4,339,150, Cl. 297-284.000.

Goldman, Abraham, to RCA Corporation. Etching method using a hardened PVA stencil. 4,339,528, Cl. 430-323.000.

Goldman, Abraham, to RCA Corporation. Etching method using a PVA stencil containing N-methylol acrylamide. 4,339,529, Cl. 430-323.000.

Goldstein, Allan L.; McClure, John E.; and Wang, Su-Sun, to Hoffmann-la Roche Inc.; and George Washington University. Radioimmunoassay of thymosina. 4,339,427, Cl. 424-1.000.

Gollomp, Bernard P., to Bendix Corporation, The. Calibrator for a magnetic azimuth detector. 4,338,810, Cl. 73-1.00E.

Goloff, Alexander, to Caterpillar Tractor Co. Low profile heat exchanger and method of making the same. 4,338,998, Cl. 165-165.000.

Golovko, Vladimir N.: *See—*
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.

Golze, Richard R. Roof top carrier. 4,339,223, Cl. 414-462.000.

Good, Lewis D. Solid fuel burning stove. 4,338,913, Cl. 126-77.000.

Goodman, Richard M.: *See—*
Lim, Sim K.; and Goodman, Richard M., 4,339,331, Cl. 209-167.000.

Gordon, Maxwell: *See—*
Buyniski, Joseph P.; Cavanagh, Robert L.; and Gordon, Maxwell, 4,339,439, Cl. 424-177.000.

Gordon, Otto W.: *See—*
Meier, Peter E.; Gordon, Otto W.; and Buttiker, Gero, 4,339,273, Cl. 106-90.000.

Gorecki, James L., to Honeywell Inc. Band gap voltage regulator. 4,339,707, Cl. 323-313.000.

Gorrichon, Jean-Pierre: *See—*
Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, 4,339,387, Cl. 549-488.000.

Goto, Kunio, to Victor Company of Japan, Ltd. Signal pickup cartridge for reproducing signals recorded on rotating recording mediums. 4,339,812, Cl. 369-170.000.

Graf, Martin J.: *See*—
Hanson, James M.; Graf, Martin J.; and Bradley, Irving, 4,339,790, Cl. 362-267.000.
Grant, Barbara D.: *See*—
Balanson, Richard D.; Clecak, Nicholas J.; Grant, Barbara D.; and Ouano, Augustus C., 4,339,522, Cl. 430-192.000.
Grant, John T., to Pittway Corporation. Electrical switch. 4,339,640, Cl. 200-61.45R.
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., to Standard Oil Co., The. Process of ammoxidation of olefins in the presence of multiply promoted Sn-Sb oxide catalysts. 4,339,394, Cl. 260-465.300.
Grasselli, Robert K.: *See*—
Guttmann, Andrew T.; and Grasselli, Robert K., 4,339,598, Cl. 560-210.000.
Grau, Harry C.: *See*—
Stevens, Lee D.; and Grau, Harry C., 4,339,132, Cl. 273-400.000.
Gray, Joseph E.: *See*—
Alaimo, Robert J.; and Gray, Joseph E., 4,339,386, Cl. 549-496.000.
Great Lakes Chemical Corporation: *See*—
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,339,357, Cl. 252-606.000.
Green, George E.; and Irving, Edward, to Ciba-Geigy Corporation. Photopolymerization by means of sulphoxonium salts. 4,339,567, Cl. 528-102.000.
Greenberger, William, to Hopp Press, The. Shelf sign device having sinuated edges. 4,338,739, Cl. 40-584.000.
Greener, Brian; and Pedder, Simon J., to SKF (U.K.) Limited. End cap assemblies for conveyor rollers. 4,339,158, Cl. 308-20.000.
Greenhalgh, Keith, to General Electric Company Limited, The. Thermally responsive switches. 4,339,740, Cl. 337-39.000.
Greier, Josef: *See*—
Kirchweger, Karl; Fachbach, Heinz; and Greier, Josef, 4,338,889, Cl. 123-198.00E.
Greten, Berndt; Neubauer, Harry; Seeger, Gunter; Bucking, Gunter; Komp, Hans J.; and Oldemeyer, Wilhelm, to Bison-werke Bahre & Greten GmbH & Co. KG. Installation and process for processing of ligno-cellulose for the manufacture of wood-product plates. 4,339,478, Cl. 427-212.000.
Gridley, Marvin C., to Ball Corporation. Glass manufacture employing a silicon carbide refining agent. 4,339,254, Cl. 65-27.000.
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., to Merck & Co., Inc. Antimicrobial aminopyrimidinium salts. 4,339,453, Cl. 424-251.000.
Grigoriev, Anatoly P.; Lifshits, Sara K.; and Shamaev, Pavel P. Method of treating diamond. 4,339,304, Cl. 156-635.000.
Grim, George B.: *See*—
Belke, William H.; and Grim, George B., 4,338,781, Cl. 60-39.350.
Grof, Helmut; Reimpell, Uwe; and Wamser, Anton, to Leybold-Heraeus GmbH. Electrode clamping device for electroremelting plants. 4,339,624, Cl. 373-52.000.
Grolig, Johann: *See*—
Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, 4,339,592, Cl. 560-25.000.
Grossman, David G.: *See*—
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,339,540, Cl. 501-3.000.
Grosvernier, Claude, to Compagnie Industrielle Radioelectrique. Installation for inspecting and sorting printed sheets of paper. 4,339,044, Cl. 209-564.000.
Grove Valve and Regulator Company: *See*—
Connolly, Walter L.; and Ray, Harold T., 4,339,112, Cl. 251-367.000.
Grover, Rajeev K.; and Gillam, Eric, to National Research Development Corporation. Tungsten carbide-based hard metals. 4,339,272, Cl. 75-240.000.
Grow Group, Inc.: *See*—
Garner, James W., 4,339,248, Cl. 55-89.000.
GRRN Company: *See*—
Witt, Frank H., Jr., 4,339,062, Cl. 224-148.000.
Gruber, Peter: *See*—
Steglich, Wolfgang; Hurnaus, Rudolf; Gruber, Peter; and Kuebel, Boerries, 4,339,589, Cl. 548-228.000.
Gruczelak, Norman P., to Minnesota Mining and Manufacturing Company. Air-flow system for a disk file. 4,339,777, Cl. 360-97.000.
Gruenberg, Elliot L., to BroadCom, Incorporated. Digital multiplexer with increased channel capacity. 4,339,818, Cl. 370-112.000.
Gruett, Monte D.; and Lesher, George Y., to Sterling Drug Inc. Process for preparing 3-amino-5-(pyridinyl)-2(1H)-pyridinones via N-hydroxy-1,2-dihydro-2-oxo-5-(pyridinyl)-nicotinimidamide by reaction with polyphosphoric acid. 4,339,584, Cl. 546-257.000.
Grumman Aerospace Corporation: *See*—
Corbett, Marshall J.; and Salina, Salvatore C., 4,339,547, Cl. 518-728.000.
Grun, Charles: *See*—
Solomon, Frank; and Grun, Charles, 4,339,325, Cl. 204-296.000.
GTE Laboratories Incorporated: *See*—
Regan, Robert J.; Cogan, Adrian; and Buhrer, Carl F., 4,339,690, Cl. 315-97.000.
GTE Products Corporation: *See*—
Coppock, Richard A.; and Reed, Edward D., 4,339,821, Cl. 372-18.000.
Guajardo, Ciro, to Teledyne Industries, Inc. Zero voltage switching AC relay circuit. 4,339,670, Cl. 307-252.00A.
Guerrero, Michel: *See*—
Malsot, Christian; and Guerrero, Michel, 4,339,165, Cl. 339-41.000.
Gulf Oil Corporation: *See*—
Kirkpatrick, Joel L., 4,339,382, Cl. 548-474.000.
Gulf Research & Development Company: *See*—
Pellegrini, John P., Jr.; Beach, David L.; and Kobylinski, Thaddeus P., 4,339,350, Cl. 252-429.00R.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,608, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,609, Cl. 568-487.000.
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Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,611, Cl. 568-487.000.
Schulz, Johann G. D.; and Cobler, John A., 4,339,346, Cl. 252-311.500.
Gullfiber AB: *See*—
Lundin, Tord R.; and Csiki, Kalman, 4,338,929, Cl. 128-152.000.
Gulyar, Anatoly V.: *See*—
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.
Gundlach, Robert W., to Vencraft Corporation. Shadowless sundial. 4,338,727, Cl. 33-269.000.
Gursky, Michael T.; and Pcihoda, William W., to Western Electric Co., Inc. Apparatus for adjustably forming pattern in a strip. 4,339,296, Cl. 156-345.000.
Guscott, John K.; and Powers, Robert, to American District Telegraph Company. Multiple range passive infrared detection system. 4,339,158, Cl. 340-555.000.
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Hill, Paul W., to Hercules Incorporated. Bifoil blade. 4,339,230, Cl. 416-226.000.

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Hirano, Hideo: *See—*
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Hodges, Jimmie R.: *See—*
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Hoeft, Werner H., to Signetics Corporation. Electrically variable impedance circuit with feedback compensation. 4,339,677, Cl. 307-564.000.

Hoekje, Howard H., to PPG Industries, Inc. Solid polymer electrolyte and method of electrolyzing brine. 4,339,314, Cl. 204-98.000.

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Goldstein, Allan L.; McClure, John E.; and Wang, Su-Sun, 4,339,427, Cl. 424-1.000.

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Hohlfeld, Gottfried: *See—*
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Holley Electric Corp.: *See—*
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Hollis, Samuel D., to Union Camp Corporation. Method of polymerizing rosin. 4,339,377, Cl. 260-99.500.

Holly, Harry H. Apparatus for making a ground food patty. 4,338,702, Cl. 17-32.000.

Honda, Makoto: *See—*
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Honig, Gunter: *See—*
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Honshu Paper Co., Ltd.: *See—*
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Hooker Chemicals & Plastics Corp.: *See—*
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Hooker, Rachael. Floating marine winch handle. 4,338,827, Cl. 74-545.000.

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Hori, Shinichi, to Asada Machinery Manufacturing Co., Ltd. Cutting apparatus. 4,338,837, Cl. 83-319.000.

Horiguchi, Makoto: *See—*
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Horner, Amos A.: *See—*
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Horng, Cheng T.; Konian, Richard R.; Schwenker, Robert O.; and Wieder, Armin W., to International Business Machines Corporation. High performance PNP and NPN transistor structure. 4,339,767, Cl. 357-44.000.

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Nihira, Yasuo; and Hosoda, Takuya, 4,339,721, Cl. 324-457.000.
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Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,339,597, Cl. 560-205.000.
House, Robert C., Jr. Beverage insulating and cooling receptacle. 4,338,795, Cl. 62-372.000.
Howerton, William B.: *See*—
Pruett, David J.; and Howerton, William B., 4,339,309, Cl. 203-29.000.
Howmedica, Inc.: *See*—
Kummer, Frederick J.; and Coutts, Richard D., 4,338,926, Cl. 128-92.0BC.
Howmet Turbine Components Corporation: *See*—
Dardi, Louis E.; and Shankar, Srinivasan, 4,339,509, Cl. 428-632.000.
Hronchek, James A., to Emhart Industries, Inc. Apparatus and method for R-C time constant circuit. 4,339,649, Cl. 219-10.55B.
Hsieh, Jung H.; and Hsieh, Jung K. Automatic mechanism for flush and raising toilet seat. 4,338,690, Cl. 4-300.000.
Hsieh, Jung K.: *See*—
Hsieh, Jung H.; and Hsieh, Jung K., 4,338,690, Cl. 4-300.000.
Huang, Tracy J.; and Haag, Werner O., to Mobil Oil Corporation. Conversion of ketones over metal-containing zeolite catalysts. 4,339,606, Cl. 568-396.000.
Huber, Bernd: *See*—
Seibel, Markus; Huber, Bernd; Bindrum, Irmgard; and Bodenheimer, Dieter, 4,339,520, Cl. 430-155.000.
Hugg, Steven B.: *See*—
Rhines, Archie E.; and Hugg, Steven B., 4,339,719, Cl. 324-446.000.
Hughes Aircraft Company: *See*—
Williams, Frederick C.; and Clements, William W., 4,339,752, Cl. 343-5.0CM.
Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schundehutte, Karl H.; and Westphal, Jochen, to Bayer Aktiengesellschaft. Azo dyestuffs. 4,339,380, Cl. 260-207.100.
Hummel, Wolfgang; Koch, Gerhard; Wilhelm, Siegfried; and Zorn, Horst, to VEB Werkzeugkombinat Schmalkalden. Clamping system for a knife having an angular cross-section. 4,338,771, Cl. 56-294.000.
Hunninghaus, Roy E.; and Bolinger, Randy L., to Motorola Inc. Electronic engine synchronization and timing apparatus. 4,338,813, Cl. 73-116.000.
Hurnaus, Rudolf: *See*—
Steglich, Wolfgang; Hurnaus, Rudolf; Gruber, Peter; and Kuebel, Boerries, 4,339,589, Cl. 548-228.000.
Husby, Donald E.; Ewing, Jerry L.; and Johnson, William H., to Westinghouse Electric Corp. Flood light aiming method. 4,339,789, Cl. 362-259.000.
Husted, Royce H. Game racket. 4,339,130, Cl. 273-73.00R.
Hutzenlaub, Rolf, to Daimler-Benz Aktiengesellschaft. Tank closure arrangement. 4,339,055, Cl. 220-295.000.
Hwang, Charles C., to University of Pittsburgh. Solar collector system employing particulate energy collecting media. 4,338,919, Cl. 126-435.000.
Ibragimov, Khakim N., deceased: *See*—
Malikov, Georgy F.; Chukhno, Vladimir A.; Timofeev, Leonid K.; Ibragimov, Khakim N., deceased; and Ibragimova, Maria F., administrator, 4,339,010, Cl. 177-134.000.
Ibragimova, Maria F., administrator: *See*—
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Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Refrigerated merchandiser display case with defrost device. 4,338,792, Cl. 62-256.000.
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, to Agency of Industrial Science & Technology Ministry of International Trade and Industry; Sony Corporation; and Oji Paper Co., Ltd. Photosensitive resinous materials containing stilbazolium groups. 4,339,524, Cl. 430-270.000.
Ichiyoshi, Osamu, to Nippon Electric Co., Ltd. Synchronous demodulator for multi-phase PSK signal. 4,339,725, Cl. 329-50.000.
Ideta, Yasufumi, to Nissan Motor Co., Ltd. Relief valve mechanism for a hydraulic booster. 4,338,855, Cl. 91-378.000.
Igarashi, Taizo: *See*—
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.
Iida, Kazuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Information recording system. 4,339,805, Cl. 364-900.000.
Ikebe, Jun: *See*—
Kosugi, Yukio; Ikebe, Jun; Takakura, Kintomo; and Kumagai, Yoriaki, 4,338,945, Cl. 128-421.000.
Ikuno, Yuji, to Olympus Optical Co., Ltd. Apparatus for supplying power to an electrosurgical device. 4,338,940, Cl. 128-303.140.
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, to Mitsui Petrochemical Industries Ltd. Process for producing resorcinol. 4,339,615, Cl. 568-768.000.
Imai, Tamotsu; and Schmidt, Robert J., to UOP Inc. Hydration of olefins in the presence of a corrosion inhibitor. 4,339,617, Cl. 568-899.000.
Imatt, Alex: *See*—
Breslow, Jeffrey D.; Imatt, Alex; and Oberth, Christian H., 4,339,135, Cl. 273-237.000.
Imber, Marion, to Ray Control Corp. Table assembled without fasteners. 4,338,867, Cl. 108-159.000.
Imperial Chemical Industries Limited: *See*—
Elmes, Terence D. J.; and McGrail, Patrick T., 4,339,531, Cl. 430-535.000.
Morley, John O., 4,339,621, Cl. 585-422.000.
Inami, Mamoru; and Tanaka, Yoshiaki, to Victor Company of Japan, Ltd. Spectrum displaying apparatus for multichannel signals. 4,339,711, Cl. 324-77.00E.
Inayama, Minoru; and Hamanaka, Hideyuki, to Rinnai Kabushiki Kaisha. Dual fan means for heating chamber of microwave cooking device. 4,339,647, Cl. 219-10.55R.
INCA Limited: *See*—
Tutty, Geoffrey C., 4,339,275, Cl. 524-255.000.
Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See*—
Enneking, Heinrich; Schubert, Gunter; Hauger, Ludwig; and Mladek, Rolf, 4,339,091, Cl. 242-47.000.
Inoue, Kiyoshi; and Watanabe, Minoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Filter-coated phosphor. 4,339,501, Cl. 428-404.000.
Inoue, Mutsuhiro: *See*—
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.
Institut de Recherches de la Siderurgie Francaise (IRSID): *See*—
Delassus, Jean; de Lamberterie, Bertrand; and Michelet, Jacques, 4,339,625, Cl. 373-158.000.
Instituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A.: *See*—
Meiattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, 4,339,317, Cl. 204-195.00B.
International Actrooi Maatschappy "Octropa" B.V.: *See*—
Kuhn, Werner, 4,338,760, Cl. 53-48.000.
International Business Machines Corporation: *See*—
Alvarez, David C.; Bjorklund, Gary C.; and Burland, Donald M., 4,339,513, Cl. 430-1.000.
Bahr, Dietrich J.; and Briska, Marian, 4,339,477, Cl. 427-14(.000.
Baise, Arnold I.; Czornyj, George; and Wu, Anthony W., 4,339,526, Cl. 430-296.000.
Balanson, Richard D.; Clecak, Nicholas J.; Grant, Barbara D.; and Ouano, Augustus C., 4,339,522, Cl. 430-192.000.
Brereton, David A.; and Stansbury, Buddy F., 4,339,795, Cl. 364-200.000.
Brereton, David A.; and Stansbury, Buddy F., 4,339,796, Cl. 364-200.000.
Brereton, David A.; and Stansbury, Buddy F., 4,339,797, Cl. 364-200.000.
Burr, Peter; and Chase, Brian D., 4,339,736, Cl. 335-213.000.
Craft, James A.; and Okcuoglu, Selahattin A., 4,339,210, Cl. 400-208.000.
Horng, Cheng T.; Konian, Richard R.; Schwenker, Robert O.; and Wieder, Armin W., 4,339,767, Cl. 357-44.000.
Larson, David D.; and Riddle, Stanley T., 4,339,657, Cl. 235-92.0QC.
Marenin, George B., 4,339,793, Cl. 364-200.000.
International Computers Limited: *See*—
Perry, Graham A., 4,339,673, Cl. 307-270.000.
International Flavors & Fragrances Inc.: *See*—
Boden, Richard M., 4,339,341, Cl. 252-174.110.
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,339,344, Cl. 252-187.240.
Yoshida, Takao, 4,339,467, Cl. 426-538.000.
International Harvester Co.: *See*—
Gerresheim, Jost, 4,339,016, Cl. 180-89.170.
Swanson, William C., 4,339,139, Cl. 280-43.230.
International Nickel Company, Inc., The: *See*—
Clark, Ian S. R.; and Baltrukovicz, Benjamin J., 4,339,401, Cl. 264-11.000.
International Paper Company: *See*—
Brauner, Arne H., 4,339,068, Cl. 229-33.000.
International Standard Electric Corporation: *See*—
Ahmed, Fahim, 4,339,633, Cl. 179-99.00M.
Minks, Werner, 4,339,734, Cl. 335-78.000.
International Synthetic Rubber Company, Limited, The: *See*—
Morgan, Peter J.; and Wyllie, Kenneth I., 4,339,623, Cl. 585-867.000.
International Telephone and Telegraph Corporation: *See*—
Hammers, David E.; and Milan, John M., 4,339,754, Cl. 343-7.700.
Johnson, Charles B., 4,339,659, Cl. 250-213.0VT.
Reed, Joseph, 4,339,816, Cl. 370-71.000.
Iowa Beef Processors, Inc.: *See*—
Welton, Myron L.; and Sheneman, Gary L., 4,338,704, Cl. 17-50.000.
Iriguchi, Norio: *See*—
Boretos, John W.; and Iriguchi, Norio, 4,339,295, Cl. 156-275.700.
Irving, Edward: *See*—
Green, George E.; and Irving, Edward, 4,339,567, Cl. 528-102.000.
Isaksson, Sven-Erik; and Larker, Hans, to Asea AB. Method of manufacturing a sintered powder body. 4,339,271, Cl. 75-223.000.
Ishida, Takashi: *See*—
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
Ishigaki, Yoshio: *See*—
Yasumura, Masayuki; and Ishigaki, Yoshio, 4,339,792, Cl. 363-75.000.
Ishihara, Toshinobu; Taguchi, Kenichi; and Yamamoto, Akira, to Shin-Etsu Chemical Co., Ltd. Method for the preparation of a sodium salt of 1-alkyne compound. 4,339,397, Cl. 260-665.00R.

Ishii, Hideki: *See—*
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.

Ishii, Yoshiyasu: *See—*
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 4,339,149, Cl. 297-250.000.

Isibasi, Masayasu: *See—*
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.

Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, to Mitsubishi Gas Chemical Company, Inc. Process for producing 2-pentenoic esters. 4,339,597, Cl. 560-205.000.

Ito, Hiroshi: *See—*
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.

Ito, Masaru: *See—*
Yasuda, Makoto; Murayama, Seiichi; and Ito, Masaru, 4,339,201, Cl. 356-312.000.

Itoh, Shuji; and Yoshida, Yoji, to Kyokuto Fatty-Acid Corporation. Method for producing a reinforced, double-faced corrugated board. 4,339,292, Cl. 156-206.000.

ITT Industries, Inc.: *See—*
Pitt, Gillies D.; and Williamson, Roger J., 4,339,661, Cl. 250-227.000.

IVAC Corporation: *See—*
Georgi, Heinz W.; Knute, Wallace L.; and Foreman, Richard L., 4,338,932, Cl. 128-214.00E.

Iwasaki, Shinichiro, to Aisin Seiki Company, Ltd. Vibration sensor. 4,338,823, Cl. 73-654.000.

Izawa, Masao: *See—*
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.

Izumi, Michinobu: *See—*
Eguchi, Tamiyuki; and Izumi, Michinobu, 4,339,334, Cl. 210-433.200.

J. B. Dicks & Ass. Inc.: *See—*
Lanier, John H., Jr., 4,338,870, Cl. 110-346.000.

J. J. Barker Company Limited: *See—*
Barker, John C.; and McLaughlin, Ivan P., 4,339,489, Cl. 428-167.000.

Jabor, Tony. Light switch delay circuit. 4,339,696, Cl. 315-360.000.

Jacobson, Allan J.; Cheng, Kent H.; and Whittingham, M. Stanley, to Exxon Research & Engineering Co. Method of preparing W or Mo metal oxides. 4,339,424, Cl. 423-606.000.

Jacobson, Earl B.; and Buchanan, H. F., to Nuclear Power Outfitters. Bag-like contaminant control work module. 4,339,163, Cl. 312-1.000.

Jacobson, Robert G., to Zehntel, Inc. Programmable sequence generator for in-circuit digital testing. 4,339,819, Cl. 371-16.000.

Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellson, Robert A., to Air Test Labs, Inc. Sampling apparatus. 4,338,826, Cl. 73-864.620.

Jacoby, Robert E.: *See—*
Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellson, Robert A., 4,338,826, Cl. 73-864.620.

Jacoby, Stuart W.: *See—*
Jacoby, Marvin; Jacoby, Stuart W.; Jacoby, Robert E.; and Ellson, Robert A., 4,338,826, Cl. 73-864.620.

Jacques, Albert M. V., to Union Carbide Corporation. Terephthalic acid derivatives and process for preparing them. 4,339,601, Cl. 562-438.000.

Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, to L'Oreal. N-(2,5-Dihydroxy-3,4,6-trimethyl-benzyl)-acrylamide and -methacrylamide polymers. 4,339,561, Cl. 526-304.000.

Jagenberg Werke AG: *See—*
Thievessen, Karl; Weiss, Peter; and Welkers, Knut, 4,339,094, Cl. 242-68.200.

Jahn, Volkmar: *See—*
Schittek, Friedrich; and Jahn, Volkmar, 4,339,075, Cl. 236-59.000.

Janke, Bernhard, to Hef Technische Entwicklung GmbH & Co. KG. Arrangement for connecting two profile members, particularly channel members for metal windows. 4,338,753, Cl. 52-309.130.

Jansen, Dirk: *See—*
Kordulla, Hans; Gerlach, Hans H.; and Jansen, Dirk, 4,339,097, Cl. 244-3.160.

Janusch, Alois, to Voest-Alpine Aktiengesellschaft. Apparatus for drying organic material, particularly brown coal. 4,339,306, Cl. 159-15.000.

Japan Synthetic Rubber Co., Ltd.: *See—*
Adachi, Norihiko; Fukai, Yoshikazu; and Kanayama, Hisanori, 4,339,435, Cl. 424-115.000.
Yamazaki, Noboru; Nakahama, Seiichi; and Yamaguchi, Kazuo, 4,339,590, Cl. 549-11.000.

Jarrett, Robert B.; and LoCascio, James J., to Motorola, Inc. Current ramping controller circuit. 4,339,669, Cl. 307-228.000.

Jarvis, Richard L., to United States of America, Army. Bump stop for trunnion-mounted weapon. 4,338,852, Cl. 89-37.00E.

Jason, Barry L.; Hall, Scott M.; and Valley, Richard L., to Motorola, Inc. Analog integrated filter circuit. 4,339,729, Cl. 330-294.000.

Jasper, Steven C.: *See—*
Predina, Joseph P.; and Jasper, Steven C., 4,339,823, Cl. 375-20.000.

Jasperson, Harold C. Pressurized chemical dispenser. 4,339,332, Cl. 210-198.100.

Jassby, Kenneth; and Zeiger, Aaron, to Ramot University Authority for Applied Research & Industrial Development. Method and apparatus for generating and detecting acoustic surface waves particularly useful in the non-destructive testing of materials. 4,338,820, Cl. 73-597.000.

Jean, Olivier A. L. Process and apparatus for subjecting a material to electromagnetic waves. 4,339,648, Cl. 219-10.55M.

Jean Walterscheid GmbH: *See—*
Herchenbach, Paul, 4,338,797, Cl. 464-167.000.

Jeffery, Thomas C.: *See—*
Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; Jeffery, Thomas C.; and Dupre, Dallas D., III, 4,339,323, Cl. 204-256.000.

Jenkins, Thomas E., to General Electric Company. Method for molding straight ribbed articles. 4,339,408, Cl. 264-328.700.

Jensen, James R., to Container Corporation of America. Container venting arrangement. 4,339,036, Cl. 206-423.000.

Jet Research Center, Inc.: *See—*
Christopher, Glenn B., 4,338,713, Cl. 29-420.500.

Jodice Controls Corporation: *See—*
Kusko, Alexander, 4,339,706, Cl. 323-248.000.

Johansen, Jack T.; and Widmer, Fred, to De Forenede Bryggerier A/S. Process for enzymatic production of peptides. 4,339,534, Cl. 435-70.000.

Johansson, Helle G.: *See—*
Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, 4,339,047, Cl. 220-1.500.

Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, to AB Maskinarbeten. Collapsible storage and transport crate capable to be stacked. 4,339,047, Cl. 220-1.500.

Johnson, Charles B., to International Telephone and Telegraph Corporation. Image converter having serial arrangement of microchannel plate, input electrode, phosphor, and photocathode. 4,339,659, Cl. 250-213.0VT.

Johnson, Douglas E.: *See—*
Devitt, John L.; Johnson, Douglas E.; and Willard, Robert S., 4,338,978, Cl. 141-1.100.

Johnson, Eric C.: *See—*
Albaum, Joseph D.; Ponzoni, Ronald W.; and Johnson, Eric C., 4,339,451, Cl. 426-250.000.

Johnson, Robert R.: *See—*
Sanford, Robert A.; and Johnson, Robert R., 4,338,956, Cl. 131-336.000.

Johnson, Russell D. Tool for positioning and defining holes in wall panels. 4,338,724, Cl. 33-174.00G.

Johnson, Warren F.: *See—*
Warner, Bert J.; Mathis, Melwyn L.; and Johnson, Warren F., 4,339,152, Cl. 299-5.000.

Johnson, William E.; and Ryan, William H., to Owens-Illinois, Inc. Environmentally protected electronic control for a glassware forming machine. 4,339,260, Cl. 65-160.000.

Johnson, William H.: *See—*
Husby, Donald E.; Ewing, Jerry L.; and Johnson, William H., 4,339,789, Cl. 362-259.000.

Jones, Addison B., to Rockwell International Corporation. Planar circuit fabrication by plating and liftoff. 4,339,305, Cl. 156-650.000.

Jones, Joseph K., to Cotton Incorporated. Method and apparatus for removing trash from material. 4,338,705, Cl. 19-80.00R.

Jones, Robert W.; and Cason, Charles M., to United States of America, Army. Pulsed laser beam intensity monitor. 4,339,199, Cl. 356-213.000.

Jones, Ruth M.: *See—*
Kalman, Sumner M.; and Jones, Ruth M., 4,339,441, Cl. 424-177.000.

Jones, Stephen H., to Nordson Corporation. Oven regulator for a skin packaging machine. 4,338,769, Cl. 53-509.000.

Jones, Thomas S., to Ciba-Geigy AG. Method and apparatus for making reeled strip material. 4,339,294, Cl. 156-252.000.

Jones, William W.: *See—*
Kelley, Charles K.; and Jones, William W., 4,339,228, Cl. 415-219.00R.

Jongsma, Cornelis, to Stamicarbon, B.V. Process for the preparation of benzene-monocarboxylic acids. 4,339,599, Cl. 562-412.000.

Joshua, Henry: *See—*
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.

Jouffroy, Guy: *See—*
Durand, Pierre; and Jouffroy, Guy, 4,339,412, Cl. 422-117.000.

Joy Manufacturing Company: *See—*
Densmore, Neal W., 4,339,031, Cl. 198-864.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich, 4,338,699, Cl. 16-237.000.

Just, Gunther; and Carduck, Franz-Josef, to Henkel Kommanditgesellschaft auf Aktien (Henkel KGaA). Process for the reduction of the particle size of coarse grain zeolitic sodium aluminosilicates. 4,339,244, Cl. 23-293.00A.

Kabushiki Kaisha Kawai Gakki Seisakusho: *See—*
Murata, Junya, 4,338,844, Cl. 84-1.010.

Kabushiki Kaisha Mikuni Seisakusho: *See—*
Nakagima, Yoshikazu, 4,339,363, Cl. 524-34.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, 4,338,777, Cl. 57-263.000.
Suzuki, Osamu; Morita, Takayuki; Ushino, Masashi; and Hirano, Hideo, 4,338,778, Cl. 57-276.000.

Kabushiki Kaisha Uchida Yoko: *See*—
Tanigami, Satoshi, 4,339,209, Cl. 400-142.000.
Kaganovsky, Yaakov: *See*—
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmuter, Shimshon, 4,338,923, Cl. 128-24.00R.
Kaganowicz, Grzegorz; and Robinson, John W., to RCA Corporation. Method of coating substrates with an abrasive layer. 4,339,471, Cl. 427-40.000.
Kage, Kouzou; and Yoshida, Ikio, to Nippon Electric Co., Ltd. Waveform converting circuit. 4,339,727, Cl. 329-106.000.
Kageyama, Yoichi; Aiura, Masato; and Moriya, Kikuo, to Mitsubishi Chemical Industries, Ltd. Liquefaction of coal. 4,339,329, Cl. 208-10.000.
Kago, Yoshiyuki; Akita, Sigeyuki; and Kotera, Masao, to Nippon Soken, Inc. Apparatus for detecting rotations. 4,339,713, Cl. 324-173.000.
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, to Kobe Steel, Ltd. Aluminum-base brazing alloy composite. 4,339,510, Cl. 428-654.000.
Kaiser Aerospace & Electronics Corporation: *See*—
Zieg, Clifford V., 4,338,689, Cl. 4-378.000.
Kalbach, John F., to A.C. Manufacturing Company; and Computer Power Systems Corp. Apparatus for preventing damage by voltage interruption. 4,339,779, Cl. 361-33.000.
Kali und Salz Aktiengesellschaft: *See*—
Duyster, Hubert; Voigt, Gunter; and Budan, Gerhard, 4,339,274, Cl. 106-106.000.
Kalman, Sumner M.; and Jones, Ruth M., to Kalman, Sumner M. Cardioactive factor. 4,339,441, Cl. 424-177.000.
Kamyr AB: *See*—
Ahs, Bjorn, 4,339,206, Cl. 366-307.000.
Kanayama, Hisanori: *See*—
Adachi, Norihiko; Fukai, Yoshikazu; and Kanayama, Hisanori, 4,339,435, Cl. 424-115.000.
Kane, Paul H.: *See*—
Hedges, Richard A.; Shockley, David L.; Fralick, Stanley C.; and Kane, Paul H., 4,339,798, Cl. 364-412.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Eguchi, Tamiyuki; and Izumi, Michinobu, 4,339,334, Cl. 210-433.200.
Kanematsu, Susumu: *See*—
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.
Kanotz, William M.; Mottine, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., to Western Electric Company, Inc. Apparatus for insulating relatively flexible conductors. 4,339,298, Cl. 156-498.000.
Kao Soap Co., Ltd.: *See*—
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.
Karatani, Yuji: *See*—
Saito, Mitsuru; Karatani, Yuji; Sakurai, Wataru; and Nobuta, Ken'ichi, 4,339,708, Cl. 324-54.000.
Karpenko, Anatole N., to Anchor/Darling Valve Company. Valve for handling hot caustic alumina solution with provision for grinding. 4,338,961, Cl. 137-243.200.
Kartinos, Nicholas J.; McGary, Terry J.; and Nolph, Karl D., to Baxter Travenol Laboratories, Inc., a part interest. Additives for peritoneal dialysis solutions. 4,339,433, Cl. 424-78.000.
Kasahara, Hideo; Fukuda, Kunio; and Suzuki, Hiroshi, to Asahi-Dow Limited. Highly heat-resistant thermoplastic resin composition having high oil-resistance. 4,339,376, Cl. 524-116.000.
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V. Core flux composition for flux-cored wires. 4,339,286, Cl. 148-24.000.
Kashiyama, Setsuo: *See*—
Yoshioka, Naonori; Tada, Hisashi; and Kashiyama, Setsuo, 4,339,490, Cl. 428-213.000.
Kato, Kochi; and Uemura, Namio, to Nippon Mining Company, Limited. Defoaming apparatus. 4,339,205, Cl. 366-296.000.
Kato, Koichi; and Uemura, Namio, to Nippon Mining Co., Ltd. Process for the preparation of long-chain dicarboxylic acids by fermentation. 4,339,536, Cl. 435-142.000.
Kato, Kotaro: *See*—
Hata, Masaharu; and Kato, Kotaro, 4,339,817, Cl. 370-93.000.
Kato, Shoshichi: *See*—
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
Katsura, Tadahiko: *See*—
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.
Kauff, Helmut: *See*—
Dilger, Peter; Honig, Gunter; and Kauff, Helmut, 4,338,900, Cl. 123-440.000.
Kaufman, Arthur L.; Vaughan, Quentin D.; von Dohlen, Roy G.; and Kopala, Richard, to Visual Graphics Corporation. Large format camera light baffle apparatus. 4,339,197, Cl. 355-58.000.
Kawabata, Nobuaki: *See*—
Yokoyama, Nobuo; and Kawabata, Nobuaki, 4,339,276, Cl. 106-271.000.
Kawaguchi, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Variable ratio brake master cylinder device. 4,338,787, Cl. 60-562.000.
Kawano, Takashi: *See*—
Tatsumi, Hisao; and Kawano, Takashi, 4,338,730, Cl. 34-54.000.
Kawasaki, Hiroyuki: *See*—
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Kawasaki, Hiroyuki, 4,339,555, Cl. 525-66.000.
Kawasaki Steel Corporation: *See*—
Hashimoto, Osamu; Sato, Susumu; and Tanaka, Tomoo, 4,339,284, Cl. 148-12.00C.
Kawata, Shoji; and Kuwana, Kazutaka, to Aisin Seiki Kabushiki Kaisha. Electromagnetically operated valve unit. 4,339,109, Cl. 251-129.000.
Kawataki, Hiroyuki: *See*—
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
Kazumura, Masaru: *See*—
Yamanaka, Haruyoshi; and Kazumura, Masaru, 4,338,877, Cl. 118-421.000.
Yamanaka, Haruyoshi; and Kazumura, Masaru, 4,339,689, Cl. 313-499.000.
Kearns, Robert W. Control apparatus for windshield wiper system. 4,339,698, Cl. 318-444.000.
Keller Companies, Inc.: *See*—
Keller, Robert R., 4,338,917, Cl. 126-429.000.
Keller, Joseph R.; and Olsson, Billy E., to AMP Incorporated. Transistors and manufacture thereof. 4,339,768, Cl. 357-72.000.
Keller, Robert R., to Keller Companies, Inc. Low temperature solar furnace and method. 4,338,917, Cl. 126-429.000.
Kelley, Charles K.; and Jones, William W., to C. K. Kelley and Sons, Inc. Power unit for single line pneumatic tube system. 4,339,228, Cl. 415-219.00R.
Kelley, Fred W., to General Electric Company. Thyristor switched inductor circuit for regulating voltage. 4,339,705, Cl. 323-210.000.
Kellogg, Charles W. Pressure relieved plug and socket cleanout assembly. 4,339,054, Cl. 220-295.000.
Kelly, Robert R.: *See*—
Krueger, Robert H.; Kelly, Robert R.; Hempel, Rudolf M.; and Miglin, Bruce P., 4,338,959, Cl. 137-93.000.
Kemp, Kenneth; and Spector, George. Tethered ball and tube target. 4,339,137, Cl. 273-331.000.
Kendall Company, The: *See*—
Arkans, Edward J., 4,338,944, Cl. 128-400.000.
Kennecott Corporation: *See*—
Lai, Ralph W. M.; and Litchfield, John K., 4,339,348, Cl. 252-364.000.
Kenney, Robert L., Jr.: *See*—
Rhodes, Richard R.; and Kenney, Robert L., Jr., 4,338,861, Cl. 102-261.000.
Kenyon, Douglas A., to Wm. E. Wright Co. Decorative tie bow. 4,339,059, Cl. 223-46.000.
Kesarwani, Hari M., to Xerox Corporation. Closed loop constant current tuned oscillator. 4,339,732, Cl. 331-109.000.
Kesper, Bernt: *See*—
Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, 4,339,570, Cl. 528-272.000.
Kessler, Katerina: *See*—
Psaila, Alexander; and Kessler, Katerina, 4,339,523, Cl. 430-239.000.
Ketting, Leendert: *See*—
Linzberger, Robert; Ketting, Leendert; and Heer, Ernst M., 4,339,083, Cl. 241-37.000.
Kielsmeier, Lester O., to Leprino Foods Company. Method of preparing pasta filata cheese for brining and cutting. 4,339,468, Cl. 426-582.000.
Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, to Mitsubishi Chemical Industries Limited. Process for preparing lithographic printing plate bases. 4,339,315, Cl. 204-129.850.
Kikuma, Toshio: *See*—
Matsumoto, Fumio; Hayami, Satohiro; Haratani, Tsutomu; Takashima, Kunihide; and Kikuma, Toshio, 4,339,287, Cl. 148-111.000.
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, to Mitsubishi Chemical Industries, Limited. Piperazinylalkoxyindanes and acid addition salts thereof. 4,339,580, Cl. 544-360.000.
Kimura, Shigenobu: *See*—
Ogita, Minoru; and Kimura, Shigenobu, 4,339,826, Cl. 455-183.000.
Kimzey, John S. Equine ambulance. 4,339,147, Cl. 296-24.00C.
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, to Sharp Kabushiki Kaisha; and Yahata Electric Works Ltd. Alternating current corona discharge apparatus. 4,339,783, Cl. 361-235.000.
Kindermann, Adalbert: *See*—
Straub, Hans F.; Kindermann, Adalbert; Burkhardt, Friedrich; and Staiger, Hans, 4,338,709, Cl. 29-26.00A.
King, Francis X.: *See*—
Shanklin, Frank G.; and King, Francis X., 4,339,093, Cl. 242-58.600.
King, William F., to Chevron Research Company. N-Substituted 3-nitro-benzylamines. 4,339,461, Cl. 424-330.000.
Kinoshita, Taketoshi: *See*—
Masaki, Mitsuo; Yamanaka, Toru; and Kinoshita, Taketoshi, 4,339,378, Cl. 260-112.50R.

Kiplinger, Terry L.: *See*—
Conery, William J.; and Kiplinger, Terry L., 4,339,231, Cl. 417-40.000.
Kircher, Morton S., to Olin Corporation. Method and apparatus of injecting replenished electrolyte fluid into an electrolytic cell. 4,339,321, Cl. 204-237.000.
Kirchweger, Karl; Fachbach, Heinz; and Greier, Josef, to List, Hans. Low-noise level internal combustion engine. 4,338,889, Cl. 123-198.00E.
Kirkpatrick, Joel L., to Gulf Oil Corporation. Process for manufacturing N-arylthiocarbamoyl-2-amino-1H-isoindole-1,3-(2H)diones. 4,339,382, Cl. 548-474.000.
Kirst, Robert J.; and Oppenhuisen, Frederick H., to National-Standard Company. Combine cylinder reel tooth. 4,338,954, Cl. 130-27.00G.
Kisaka, Yoshiyuki: *See*—
Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,339,315, Cl. 204-129.850.
Kiser, Robert E. Toolholder. 4,338,749, Cl. 51-220.000.
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, to Mitsubishi Rayon Company, Ltd. Coating composition and process for preparing synthetic resin shaped articles by using same. 4,339,474, Cl. 427-54.100.
Kita, Harumi, to Takeda Chemical Industries, Ltd. Production of pyridoxine. 4,339,586, Cl. 546-301.000.
Kittelson, David B.: *See*—
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., 4,338,784, Cl. 60-274.000.
Kleemann, Axel; Lehmann, Bernd; and Klenk, Herbert, to Degussa Aktiengesellschaft. Process for the production of caboxylic acid cyanides. 4,339,591, Cl. 549-72.000.
Klenk, Herbert: *See*—
Kleemann, Axel; Lehmann, Bernd; and Klenk, Herbert, 4,339,591, Cl. 549-72.000.
Kliem, Erhard: *See*—
Lahne, Ulrich; Hesse, Peter; Kliem, Erhard; Kruis, Bernhard; and Lohmuller, Reiner, 4,339,413, Cl. 422-200.000.
Klinge, Gerd: *See*—
Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,339,403, Cl. 264-40.100.
Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,339,404, Cl. 264-40.100.
Klockner-Humboldt-Deutz AG: *See*—
Hiller, Georg, 4,339,072, Cl. 233-7.000.
Knackstedt, Hans-Gunther; Laug, Reiner; and Muller, Erhard, to Degussa Transnuklear GmbH. Shielding container for the transportation and/or for storage of spent fuel elements. 4,339,411, Cl. 376-272.000.
Knapp, Robert L.: *See*—
Blodee, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., 4,338,990, Cl. 160-229.00R.
Knifton, John F., to Texaco Inc. Alkanols from synthesis gas. 4,339,545, Cl. 518-700.000.
Knippel, Willis H., to Pullman Incorporated. Door locking mechanism for hopper car doors. 4,339,222, Cl. 414-387.000.
Knol, Dirk: *See*—
van Geem, Paul C.; de Graaf, Theodorus F. M.; Knol, Dirk; and Plantema, Otto G., 4,339,604, Cl. 568-357.000.
Knudsen, Finn B.: *See*—
Van Gheluwe, George E. A.; Weaver, Robert L.; Dadic, Miroslav; and Knudsen, Finn B., 4,339,466, Cl. 426-430.000.
Knute, Wallace L.: *See*—
Georgi, Heinz W.; Knute, Wallace L.; and Foreman, Richard L., 4,338,932, Cl. 128-214.00E.
Kobayashi, Nariyoshi: *See*—
Sakamoto, Takeshi; Anzai, Shunichi; Kobayashi, Nariyoshi; and Oshima, Ryoichiro, 4,338,780, Cl. 60-39.050.
Kobayashi, Tadashi: *See*—
Shirano, Tomishi; Maruchi, Sachio; Yakan, Koji; Kobayashi, Tadashi; and Akimoto, Saburo, 4,339,485, Cl. 428-40.000.
Kobe Steel, Ltd.: *See*—
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.
Kobylinski, Thaddeus P.: *See*—
Pellegrini, John P., Jr.; Beach, David L.; and Kobylinski, Thaddeus P., 4,339,350, Cl. 252-429.00R.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,608, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,609, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,610, Cl. 568-487.000.
Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., 4,339,611, Cl. 568-487.000.
Koch, Gerhard: *See*—
Hummel, Wolfgang; Koch, Gerhard; Wilhelm, Siegfried; and Zorn, Horst, 4,338,771, Cl. 56-294.000.
Koch, Robert E.: *See*—
Leach, John G.; and Koch, Robert E., 4,339,742, Cl. 337-279.000.
Kodama, Hisashi, to Aisin Seiki Kabushiki Kaisha. Self-contained hydraulic lash adjuster. 4,338,894, Cl. 123-90.580.
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., to Upjohn Company, The. Novel process and product. 4,339,343, Cl. 252-182.000.
Kofler, Hansjorg: *See*—
Flecher, Pierre; and Kofler, Hansjorg, 4,339,680, Cl. 310-62.000.
Kogutek, Robert J.: *See*—
Puccio, Guy S.; and Kogutek, Robert J., 4,339,214, Cl. 404-69.000.
Kohler, Helmut: *See*—
Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Kohler, Helmut; and Louis, Heinrich, 4,339,328, Cl. 208-8.0LE.
Koito Manufacturing Company, Ltd.: *See*—
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.
Kojima, Kazuhisa: *See*—
Hasuo, Masayoshi; Suga, Yoshinori; Kojima, Kazuhisa; and Suzuki, Masatoshi, 4,339,557, Cl. 525-247.000.
Kojima, Shunji: *See*—
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.
Kollmorgen Technologies Corporation: *See*—
Frisch, David C.; and Weber, Wilhelm, 4,339,303, Cl. 156-629.000.
Kolodzey, James S., to Optical Information Systems, Inc. Diode laser digital modulator. 4,339,822, Cl. 372-26.000.
Kolomiets, Ljudmila N.: *See*—
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.
Komatsu, Hiroshi: *See*—
Sakabe, Yukio; Hamaji, Yukio; and Komatsu, Hiroshi, 4,339,544, Cl. 501-136.000.
Komine, Kikuji: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,339,619, Cl. 570-183.000.
Komp, Hans J.: *See*—
Greten, Berndt; Neubauer, Harry; Seeger, Gunter; Bucking, Gunter; Komp, Hans J.; and Oldemeyer, Wilhelm, 4,339,478, Cl. 427-212.000.
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, to Mitsubishi Denki Kabushiki Kaisha. Glow discharge heating apparatus. 4,339,656, Cl. 219-494.000.
Komura, Tamotsu; Miyamoto, Takuji; and Nakanaga, Hiroshi, to Sankin Industry Co., Ltd. Hardening resin compositions. 4,339,558, Cl. 525-524.000.
Kondow, Ryotaro: *See*—
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, 4,339,802, Cl. 364-483.000.
Konian, Richard R.: *See*—
Horng, Cheng T.; Konian, Richard R.; Schwenker, Robert O.; and Wieder, Armin W., 4,339,767, Cl. 357-44.000.
Ko'Oka, Yoshinobu; Munekage, Mariko; and Minato, Hitoshi, to Shionogi & Co., Ltd. Substituted-imidazolidinyl-3-chloro-3-cephem-4-carboxylic acid. 4,339,575, Cl. 544-20.000.
Kopala, Richard: *See*—
Kaufman, Arthur L.; Vaughan, Quentin D.; von Dohlen, Roy G.; and Kopala, Richard, 4,339,197, Cl. 355-58.000.
Koppers Company, Inc.: *See*—
Capers, Billy G., 4,338,715, Cl. 29-451.000.
Kopse, Odon, to Robert Bosch GmbH. Fuel injection nozzle. 4,339,080, Cl. 239-533.300.
Kordulla, Hans; Gerlach, Hans H.; and Jansen, Dirk, to Bodenseewerk Geratetechnik GmbH. Target seeking head for a missile. 4,339,097, Cl. 244-3.160.
Kos, Joseph M.: *See*—
Patrick, John P.; Kos, Joseph M.; and Harner, Kermit I., 4,339,666, Cl. 290-44.000.
Kosuda, Hiroyuki; and Niijima, Kenji, to Toho Beslon Co., Ltd. Carbon fiber reinforced carbon friction element and method of making. 4,339,021, Cl. 191-50.000.
Kosugi, Yukio; Ikebe, Jun; Takakura, Kintomo; and Kumagai, Yoriaki, to Clinical Engineering Laboratory Limited. Method and randomized electrical stimulation system for pain relief. 4,338,945, Cl. 128-421.000.
Kotani, Matahira: *See*—
Matsumoto, Masafumi; and Kotani, Matahira, 4,339,761, Cl. 346-75.000.
Kotera, Masao: *See*—
Kago, Yoshiyuki; Akita, Sigeyuki; and Kotera, Masao, 4,339,713, Cl. 324-173.000.
Kowada, Masaaki: *See*—
Doi, Keiichiro; Makita, Minoru; and Kowada, Masaaki, 4,339,646, Cl. 219-10.55B.
Kowalik, Peter M.: *See*—
Cleaveland, Charles M.; and Kowalik, Peter M., 4,339,636, Cl. 200-48.00A.
Koyanagi, Haruo: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaoki, 4,339,794, Cl. 364-200.000.
Krackeler, Joseph J.; and Weir, Fred E., to Raychem Corporation. Recoverable sleeve. 4,338,970, Cl. 138-141.000.
Krankkala, Paul L., to Champion International Corporation. Water resistant starch-based corrugating adhesive composition. 4,339,364, Cl. 524-44.000.
Kranz, Eckart; and Siegle, Peter, to Bayer Aktiengesellschaft. Preparation of 3,3-dimethyl-1-phenoxy-butan-2-ols as fungicide intermediates. 4,339,612, Cl. 568-649.000.
Kraus, Hubert, to Siemens Aktiengesellschaft. Method for soldering leads to electrical components. 4,339,651, Cl. 219-85.0CM.

Krenzer, Eberhard, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Process for the production of a crimped continuous multifilament yarn. 4,338,776, Cl. 57-246.000.

Krigas, Thomas: *See—*
Rosenberg, Barnett; VanCamp, Loretta; and Krigas, Thomas, 4,339,437, Cl. 424-131.000.

Krocker, Robert E.: *See—*
Saunders, James F.; and Krocker, Robert E., 4,338,790, Cl. 62-80.000.

Kronberg, Richard E.; and Walters, Merlin L. Automotive fluid supply funnel unit. 4,338,984, Cl. 141-331.000.

Krueger, Robert H.; Kelly, Robert R.; Hempel, Rudolf M.; and Miglin, Bruce P., to Borg-Warner Corporation. Device to automatically add a controlled amount of corrosion inhibitor in an engine cooling system. 4,338,959, Cl. 137-93.000.

Krueger, Robert H.; Zambrow, John L.; and Cheadle, Brian E., to Borg-Warner Corporation. Heat exchanger with bilayered metal end container for anticorrosive addition. 4,338,997, Cl. 165-134.00R.

Krueger, Wallace F. Power-assisted valve. 4,339,233, Cl. 417-317.000.

Kruis, Bernhard: *See—*
Lahne, Ulrich; Hesse, Peter; Kliem, Erhard; Kruis, Bernhard; and Lohmuller, Reiner, 4,339,413, Cl. 422-200.000.

Kubinski, Karen R.: *See—*
Beall, George H.; Grossman, David G.; Hoda, Syed N.; and Kubinski, Karen R., 4,339,540, Cl. 501-3.000.

Kuchler, Fritz, to Brain Dust Patents Establishment. Slicing machine with slice-depositing device. 4,338,836, Cl. 83-94.000.

Kuebel, Boerries: *See—*
Steglich, Wolfgang; Hurnaus, Rudolf; Gruber, Peter; and Kuebel, Boerries, 4,339,589, Cl. 548-228.000.

Kuhn, Eberhard: *See—*
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,339,521, Cl. 430-192.000.

Kuhn, Werner, to International Actrooi Maatschappy "Octropa" B.V. Carrier pack for a number of bottles as well as the process and apparatus needed to close the pack. 4,338,760, Cl. 53-48.000.

Kuhne, Norbert: *See—*
Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,573, Cl. 536-84.000.
Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,574, Cl. 536-84.000.

Kullmann, Dieter: *See—*
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Kumagai, Yoriaki: *See—*
Kosugi, Yukio; Ikebe, Jun; Takakura, Kintomo; and Kumagai, Yoriaki, 4,338,945, Cl. 128-421.000.

Kummer, Frederick J.; and Coutts, Richard D., to Howmedica, Inc. Bone fracture prosthesis with controlled stiffness. 4,338,926, Cl. 128-92.0BC.

Kunii, Tadashi: *See—*
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.

Kunkel, Heinrich: *See—*
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,339,374, Cl. 524-606.000.

Kuroda, Kei-ichi; Sillou, Daniel; and Takeutchi, Fujio, to ANVAR. Electron multiplier tube with axial magnetic field. 4,339,684, Cl. 313-105.00R.

Kurtz, Bruce E.: *See—*
Choi, John I.; Kurtz, Bruce E.; and Omelian, Anatoli, 4,339,415, Cl. 423-126.000.

Kurtz, Stuart J.; and Apgar, Howard G., Jr., to Union Carbide Corporation. Linear low density ethylene hydrocarbon copolymer containing composition for extrusion coating. 4,339,507, Cl. 428-522.000.

Kusama, Hideo: *See—*
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.

Kushi, Kenji: *See—*
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,339,474, Cl. 427-54.100.

Kusko, Alexander, to Jodice Controls Corporation. Current controlling. 4,339,706, Cl. 323-248.000.

Kusumi, Takenori; and Nakanishi, Koji, to Suntory Limited. Plant growth regulators comprising 4-hydroxyisoxazole and related compounds. 4,339,588, Cl. 548-247.000.

Kuwana, Kazutaka: *See—*
Kawata, Shoji; and Kuwana, Kazutaka, 4,339,109, Cl. 251-129.000.

Kuwayama, Tetsuro: *See—*
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.

Kwatnoski, Richard; and McHugh, Robert J., to United States of America, Army. Bullet nose filler for improved lethality. 4,338,862, Cl. 102-516.000.

Kyokuto Fatty-Acid Corporation: *See—*
Itoh, Shuji; and Yoshida, Yoji, 4,339,292, Cl. 156-206.000.

Kyowa Hakko Kogyo Kabushiki Kaisha: *See—*
Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, 4,338,745, Cl. 47-58.000.

Kyser, Edmond L.; and Sears, Stephan B., to System Industries, Inc. Apparatus for recording with writing fluids and drop projection means therefor. 4,339,763, Cl. 346-140.00R.

L.G.T Laboratoire General des Telecommunications: *See—*
Chemin, Henri; Cluniat, Claude; and Beltzer, Bernard, 4,339,773, Cl. 358-184.000.

Laboratoires Jacques Logeais: *See—*
Maillard, Jacques G.; and Legeai, Jacky, 4,339,384, Cl. 548-525.000.

Laboratoires OM Societe Anonyme: *See—*
Schultess, Adrian; and Farine, Jean-Claude, 4,339,421, Cl. 423-330.000.

Lacey, Patrick J., to Drillco Devices Limited. Expanding anchor bolt assembly. 4,339,217, Cl. 411-55.000.

Lada, Henry; and Fishter, Robert E., to United Technologies Corporation. Method and composition for removing aluminide coatings from nickel superalloys. 4,339,282, Cl. 134-3.000.

Ladouceur, Harold A.: *See—*
Steward, John H.; and Ladouceur, Harold A., 4,338,694, Cl. 10-72.00R.

Lahne, Ulrich; Hesse, Peter; Kliem, Erhard; Kruis, Bernhard; and Lohmuller, Reiner, to Linde Aktiengesellschaft. Methanol-synthesis reactor. 4,339,413, Cl. 422-200.000.

Lai, Ralph W. M.; and Litchfield, John K., to Kennecott Corporation. Dioxime ion exchangers. 4,339,348, Cl. 252-364.000.

Lamb, Charles A. Apparatus for accommodating wheelchairs in public transportation vehicles. 4,339,224, Cl. 414-501.000.

Lamb, Owen L. Slide previewer and tray loader. 4,338,738, Cl. 40-509.000.

Lambert, Roger: *See—*
Tardot, Jacques; and Lambert, Roger, 4,339,098, Cl. 244-151.00B.

Lange, Karl-Heinz, to FICO Fischer & Co. Maschinenbau GmbH. Apparatus for the production of ornamental link chains (venetian chains) ready for soldering. 4,338,779, Cl. 59-25.000.

Langer, Erich; Mach, Helmut; and Melwisch, Harald, to U.S. Philips Corporation. Preprogrammable recording system with automatic warning of time limit. 4,339,776, Cl. 360-69.000.

Lanier, John H., Jr., to Holley Electric Corp.; and J. B. Dicks & Ass. Inc. High temperature oxygen hazardous waste incinerator. 4,338,870, Cl. 110-346.000.

Lankard, David R., to Battelle Development Corporation. Concrete overlay construction. 4,339,289, Cl. 156-91.000.

LaPorta, Jr., Phil. Cervical collar. 4,338,685, Cl. 2-2.000.

Larker, Hans: *See—*
Isaksson, Sven-Erik; and Larker, Hans, 4,339,271, Cl. 75-223.000.

Larson, David D.; and Riddle, Stanley T., to International Business Machines Corporation. Error logging for automatic apparatus. 4,339,657, Cl. 235-92.0QC.

Lascelles, Daniel J.; and Walker, Jack M., to McDonnell Douglas Corporation. Electrical switch. 4,339,638, Cl. 200-52.00R.

Lasecki, Robert R.; Reeve, Howard C., III; and Lindan, Nicholas O., to Nuarc Company, Inc., The. Power supply for HID lamp. 4,339,692, Cl. 315-277.000.

Latta, Joseph E., Jr. School bus stop sign. 4,339,744, Cl. 340-133.000.

Laubenberger, Herbert: *See—*
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,339,499, Cl. 428-373.000.

Lauer, George E. Apparatus for orienting halved fruit cut side down. 4,339,027, Cl. 198-383.000.

Laug, Reiner: *See—*
Knackstedt, Hans-Gunther; Laug, Reiner; and Muller, Erhard, 4,339,411, Cl. 376-272.000.

Lauroesch, Hugo C., to General Electric Company. Laser undercutting system. 4,339,655, Cl. 219-121.0LJ.

Lauterbach, Uwe; and Michel, Wolfgang, to Hoechst Aktiengesellschaft. Process for bonding wallpapers to wall insulations and composite sheeting prepared in accordance therewith. 4,339,491, Cl. 428-317.700.

Lauton, Alain: *See—*
Fringeli, Werner; and Lauton, Alain, 4,339,238, Cl. 8-527.000.

Lawrance, Richard J.: *See—*
Balko, Edward N.; and Lawrance, Richard J., 4,339,322, Cl. 204-255.000.

Lawson Paper Converters Limited: *See—*
Davies, Frank H., 4,339,070, Cl. 229-52.00B.

Lay, Harry V. Panel raising and positioning apparatus. 4,339,219, Cl. 414-11.000.

Le Silicium Semiconducteur SSC: *See—*
Arnould, Jacques, 4,339,627, Cl. 136-259.000.

Leach, John G.; and Koch, Robert E., to General Electric Company. High voltage fuse having mounted gas evolving members and method of forming such. 4,339,742, Cl. 337-279.000.

Leather, Russell A., to Ferranti Limited. Connector having a single segmented deformable grip member for optical cables. 4,339,172, Cl. 350-96.210.

Leb, Herbert S.: *See—*
Martin, Leonard G.; and Leb, Herbert S., 4,338,928, Cl. 128-136.000.

LeBegue, Maurice K.; and Michael, Earl C., to National Mine Service Company. Apparatus for extending and retracting the cutter bars of a boring type mining machine. 4,339,153, Cl. 299-59.000.

Le Dieu, Bernard: *See—*
Herledan, Jean-Rene; Le Dieu, Bernard; Martin, Jean-Pierre; and Quemere, Daniel, 4,339,815, Cl. 370-58.000.

Lee Engineering, Inc.: *See—*
Mason, Edward M., 4,338,857, Cl. 92-62.000.

Lee, Joseph Y.: *See—*
D'Agostino, Vincent F.; and Lee, Joseph Y., 4,339,473, Cl. 427-44.000.

Lee, Tzuo-Chang, to Honeywell Inc. Holographic space-variant system for evaluating the ambiguity integral. 4,339,176, Cl. 350-162.0SF.
Lee, Yu-Kuang. Multiple-purpose automatic control system. 4,339,226, Cl. 415-15.000.
Legeai, Jacky: *See—*
Maillard, Jacques G.; and Legeai, Jacky, 4,339,384, Cl. 548-525.000.
Lehmann, Bernd: *See—*
Kleemann, Axel; Lehmann, Bernd; and Klenk, Herbert, 4,339,591, Cl. 549-72.000.
Lehmann, Hans: *See—*
Gutekunst, Ferdinand; Lehmann, Hans; and Schmid, Rolf, 4,339,571, Cl. 528-361.000.
Lehmann, J. C. Ludwig, to Binz GmbH & Co. Coachwork for a medically equipped vehicle. 4,339,146, Cl. 296-19.000.
Lehmann, Roger W. Safety clip-on ornamental badge. 4,338,737, Cl. 40-1.500.
Leighton, Robert D., to Alden Research Foundation. Electronic circuit encapsulation. 4,339,407, Cl. 264-229.000.
Leingang, John L., to United States of America, Air Force. Two-stage hypersonic ramjet. 4,338,783, Cl. 60-225.000.
Leins, Eberhard: *See—*
Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.
Leipold, Ludwig: *See—*
Mueller, Ruediger; Pomper, Michael; and Leipold, Ludwig, 4,339,668, Cl. 307-149.000.
Leischner, Hasso: *See—*
Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,573, Cl. 536-84.000.
Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, 4,339,574, Cl. 536-84.000.
Leland Stanford Junior University, The Board of Trustees of: *See—*
Cohen, Stanley N.; and Boyer, Herbert W., 4,339,538, Cl. 435-253.000.
Lemke, James U.; and Bixby, James A., to Eastman Technology, Inc. Fast frame rate augmentation. 4,339,775, Cl. 360-10.000.
Lennis, Ralph J.; and Handy, Ralph L., to Chrysler Corporation. Insertless distributor cap. 4,338,895, Cl. 123-146.50A.
Leon, Albert M., to Dorr-Oliver Incorporated. Low profile fluid bed heater or vaporizer. 4,338,887, Cl. 122-4.00D.
Leopold Kostal, Firma: *See—*
Bergmann, Eduard; and Speidel, Volker, 4,339,667, Cl. 307-10.0LS.
Leprino Foods Company: *See—*
Kielsmeier, Lester O., 4,339,468, Cl. 426-582.000.
Lerman, Sheldon H. Mechanical continent ileostomy or colostomy. 4,338,937, Cl. 128-283.000.
Lerner, David I.: *See—*
Willis, Brian J.; Lerner, David I.; and Barton, Derek H. R., 4,339,593, Cl. 560-70.000.
Les Entreprises Rotot Ltee: *See—*
Thiboutot, Robert, 4,339,141, Cl. 280-652.000.
Lesher, George Y.: *See—*
Gruett, Monte D.; and Lesher, George Y., 4,339,584, Cl. 546-257.000.
L'ETAT FRANCAIS, represente par le Delegue General pour l'Armement: *See—*
Tardot, Jacques; and Lambert, Roger, 4,339,098, Cl. 244-151.00B.
Leuchter, Fred A., Jr., to Celenav Industries, Inc. Geodetic instrument. 4,339,198, Cl. 356-144.000.
Lever Brothers Company: *See—*
Ritchey, Thomas W.; Weaver, John M.; and Sapone, Martin, 4,339,432, Cl. 424-54.000.
Levin, Philip S., to Corning Glass Works. High bandwidth optical waveguide. 4,339,174, Cl. 350-96.310.
Levine, Rosalie S.: *See—*
Witt, Frank H., Jr., 4,339,062, Cl. 224-148.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,339,266, Cl. 71-92.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,339,267, Cl. 71-92.000.
Lewis, Barry J.: *See—*
Snellman, Donald L.; Lewis, Barry J.; Saunders, Arthur G.; and Hester, Wesley W., 4,339,299, Cl. 156-563.000.
Lewis, Harold F.: *See—*
Rukavina, Thomas G.; and Lewis, Harold F., 4,339,503, Cl. 428-412.000.
Lewis, Wayne J.: *See—*
Davison, Alan B.; and Lewis, Wayne J., 4,339,804, Cl. 364-900.000.
Leybold-Heraeus GmbH: *See—*
Grof, Helmut; Reimpell, Uwe; and Wamser, Anton, 4,339,624, Cl. 373-52.000.
Mahler, Peter, 4,338,883, Cl. 118-719.000.
Libbey-Owens-Ford Company: *See—*
Walton, Ronald O.; and Tary, Orville L., 4,339,261, Cl. 65-178.000.
Liedholm, David W., to Raychem Corporation. Flat conductor to round conductor connection system. 4,339,167, Cl. 339-272.00A.
Lientz, la Clede. Refuse burning process and apparatus. 4,338,868, Cl. 110-246.000.
Liepelt, Eberhard, to Saint-Gobain Vitrage. Cooling apparatus for float-glass installation. 4,339,262, Cl. 65-182.100.
Lifshits, Sara K.: *See—*
Grigoriev, Anatoly P.; Lifshits, Sara K.; and Shamaev, Pavel P., 4,339,304, Cl. 156-635.000.
Ligorati, Ferdinando; and Sartorio, Emanuele, to Euteco Impianti S.p.A. Process for the thermal decomposition of phenol pitch. 4,339,605, Cl. 568-383.000.
Lim, Sim K.; and Goodman, Richard M., to American Cyanamid Company. Crosslinked starches as depressants in mineral ore flotation. 4,339,331, Cl. 209-167.000.
Lindan, Nicholas O.: *See—*
Lasecki, Robert R.; Reeve, Howard C., III; and Lindan, Nicholas O., 4,339,692, Cl. 315-277.000.
Lindbeck, Laurel B. Gasoline fume generator and mixer. 4,338,907, Cl. 123-557.000.
Linde Aktiengesellschaft: *See—*
Lahne, Ulrich; Hesse, Peter; Kliem, Erhard; Kruis, Bernhard; and Lohmuller, Reiner, 4,339,413, Cl. 422-200.000.
Lindemann, Martin K., to National Starch & Chemical Corporation. Vinyl ester aqueous adhesive emulsions including acrylamide. 4,339,552, Cl. 524-459.000.
Lindgren, Kenneth B., to Verkstadsproduktion I Borlange AB. Safety apparatus for automatic supervision and control of a pressure fluid system. 4,338,812, Cl. 73-40.50R.
Lindqvist, Lars A., to Spar Vatten Och Energi AB. Liquid flow channel. 4,339,081, Cl. 239-552.000.
Link, William T.; and Hobson, Stephen, to Datagraphix, Inc. Lens arrangements for microfiche reader assembly and method. 4,339,181, Cl. 353-27.00R.
Linzberger, Robert; Ketting, Leendert; and Heer, Ernst M., to Gebrueder Buehler AG. Apparatus for the grinding of cereal. 4,339,083, Cl. 241-37.000.
Lion Corporation: *See—*
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.
Lisowski, Walter E. Boats hardware system. 4,338,875, Cl. 114-221.00R.
List, Hans: *See—*
Kirchweger, Karl; Fachbach, Heinz; and Greier, Josef, 4,338,889, Cl. 123-198.00E.
Pomfret, Colin T.; and Freyn, Fritz, 4,338,893, Cl. 123-90.160.
Litchfield, John K.: *See—*
Lai, Ralph W. M.; and Litchfield, John K., 4,339,348, Cl. 252-364.000.
Litton Systems, Inc.: *See—*
Urschel, Edward O., 4,339,679, Cl. 310-49.00R.
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., to University of Minn., The Regents of the. Method of recycling collected exhaust particles. 4,338,784, Cl. 60-274.000.
Liu, Wen-Chih: *See—*
Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, 4,339,535, Cl. 435-119.000.
Livesay, Richard E., to Caterpillar Tractor Co. Roller-idler assembly for crawler undercarriage. 4,339,156, Cl. 305-22.000.
LoCascio, James J.: *See—*
Jarrett, Robert B.; and LoCascio, James J., 4,339,669, Cl. 307-228.000.
Loecshe GmbH Company: *See—*
Brundiek, Horst, 4,339,086, Cl. 241-121.000.
Loewy Robertson Engineering Co. Ltd.: *See—*
Benoy, David C.; and Frederick, George T., 4,339,092, Cl. 242-56.00R.
Lofthouse, Charles H.: *See—*
Windle, William; Lofthouse, Charles H.; and Shergold, Howard L., 4,339,042, Cl. 209-5.000.
Lohmuller, Reiner: *See—*
Lahne, Ulrich; Hesse, Peter; Kliem, Erhard; Kruis, Bernhard; and Lohmuller, Reiner, 4,339,413, Cl. 422-200.000.
Lord Corporation: *See—*
Warnaka, Glenn E., 4,339,018, Cl. 181-286.000.
L'Oreal: *See—*
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,339,561, Cl. 526-304.000.
Louis, Heinrich: *See—*
Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Kohler, Helmut; and Louis, Heinrich, 4,339,328, Cl. 208-8.0LE.
Lucas Industries Limited: *See—*
Fowkes, Ronald; and Harding, Geoffrey G., 4,339,015, Cl. 180-65.00R.
Margetts, Hugh G., 4,338,854, Cl. 91-369.00A.
Williams, Derek, 4,339,234, Cl. 417-490.000.
Lucian, Anton; and Zwiener, Rudolf, to Aktiengesellschaft Adolph Saurer. Device for transferring a weft thread in a shuttleless loom. 4,338,971, Cl. 139-194.000.
Lucitron, Inc.: *See—*
Glaser, David; and Whelchel, Charles J., 4,339,482, Cl. 428-13.000.
Ludwig, George C., to Tom McGuane Industries. Multiple resistance element assembly and method of making same. 4,339,743, Cl. 338-206.000.
Luebbe, Ray H., Jr.; Miro, Frank; and Palermiti, Frank M., to Exxon Research & Engineering Co. Low odor electrosensitive paper. 4,339,504, Cl. 428-513.000.
LUK Lamellen und Kupplungsbau GmbH: *See—*
Beitecke, Bernd; and Schmidt, Reinhold, 4,338,801, Cl. 68-13.00R.
Lundin, Tord R.; and Csiki, Kalman, to Gullfiber AB. Ear-plug. 4,338,929, Cl. 128-152.000.
Luthi, Christian; Meyer, Hans R.; and Weber, Kurt, to Ciba-Geigy Corporation. Distyrylbiphenyls. 4,339,393, Cl. 260-459.00A.

Macaluso, Paul J.: *See*—
Beck, Christian A.; and Macaluso, Paul J., 4,339,196, Cl. 355-3.0DD.

Mach, Helmut: *See*—
Langer, Erich; Mach, Helmut; and Melwisch, Harald, 4,339,776, Cl. 360-69.000.

Macheel, Gary W., to Rockwell International Corporation. Electronic card game. 4,339,134, Cl. 273-138.00A.

Machinefabriek G.J. Nijhuis B.V.: *See*—
Nijhuis, Johan W., 4,338,700, Cl. 17-1.00E.

Maciejewski, Jeremi. Hydrostatically damping and shock absorbing non-vulcanizable polysiloxane and boron compound for mechanical energy absorption. 4,339,339, Cl. 252-75.000.

Macklem, David M.: *See*—
Marcantonio, Gabriel; and Macklem, David M., 4,339,628, Cl. 174-35.00R.

MacLeod, Robert B., Jr.: *See*—
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,339,162, Cl. 312-10.000.

MacPherson, Edwin J.; and Frenette, Daniel A., to Fiberglas Canada, Inc. Phenol-formaldehyde resins extended with carbohydrates for use in binder compositions. 4,339,361, Cl. 527-303.000.

Maeda Industries, Ltd.: *See*—
Ozaki, Nobuo, 4,338,829, Cl. 74-594.400.

Maeda, Shiro: *See*—
Tsuya, Noboru; and Arai, Kenichi, 4,339,508, Cl. 428-606.000.

Mafrand, Jean P.; and Courregelongue, Jean, to Sanofi. Aminopropan-2-01 derivatives and pharmaceutical compositions. 4,339,450, Cl. 424-248.510.

Mage, Jean-Claude; and Deljurie, Claude, to Thomson-CSF. Temperature-stable dielectric material for use at very high frequency and a method of manufacture of said material. 4,339,543, Cl. 501-134.000.

Magers, Thomas A.; and Tabb, David L., to Miles Laboratories, Inc. Stabilization of benzidine-type indicators with various enhancers. 4,339,242, Cl. 23-230.00B.

Magers, Thomas A.; and Tabb, David L., to Miles Laboratories, Inc. Stabilization of benzidine-type indicators with various enhancers. 4,339,243, Cl. 23-230.00B.

Maget, Henri J. R.: *See*—
Fisher, Gerald M.; and Maget, Henri J. R., 4,339,626, Cl. 136-248.000.

Magistro, Angelo J.: *See*—
Cowfer, Joseph A.; Eden, Jamal S.; and Magistro, Angelo J., 4,339,620, Cl. 570-243.000.

Mahieu, Claude: *See*—
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,339,561, Cl. 526-304.000.

Mahler, Peter, to Leybold-Heraeus GmbH. Vacuum vapor-deposition installation with a vacuum chamber, a vaporizing chamber and an evaporizing chamber. 4,338,883, Cl. 118-719.000.

Mahnke, Parker E.: *See*—
Uyeda, Tim M.; and Mahnke, Parker E., 4,339,125, Cl. 272-118.000.

Maillard, Jacques G.; and Legeai, Jacky, to Laboratoires Jacques Logeais. Benzofuran derivatives and their therapeutic applications. 4,339,384, Cl. 548-525.000.

Mair, Gareth A.: *See*—
Abele, Manlio G.; Chase, Norman E.; and Mair, Gareth A., 4,339,799, Cl. 364-414.000.

Makeev, Anatoly E.; and Sirotinsky, Alexandr A. Apparatus for applying enamel slip to pipe. 4,338,879, Cl. 118-602.000.

Makita, Minoru: *See*—
Doi, Keiichiro; Makita, Minoru; and Kowada, Masaaki, 4,339,646, Cl. 219-10.55B.

Makuch, John A.; and Monaghan, Kevin J., to Bunker Ramo Corporation. Fiber optic cable retainer member. 4,339,171, Cl. 350-96.200.

Malikov, Georgy F.; Chukhno, Vladimir A.; Timofeev, Leonid K.; Ibragimov, Khakim N., deceased; and by Ibragimova, Maria F., administrator. Apparatus for weighing transport vehicles in motion. 4,339,010, Cl. 177-134.000.

Malsot, Christian; and Guerrero, Michel, to Socapex. Connector protective device and connector provided with such a protective device. 4,339,165, Cl. 339-41.000.

Manley, Martin H.: *See*—
Bloodworth, Greville G.; and Manley, Martin H., 4,339,715, Cl. 324-252.000.

Mannes, Karl: *See*—
Rauchschwalbe, Gunter; Mannes, Karl; and Mayer, Dietmar, 4,339,396, Cl. 260-543.00R.

Mannices, George F.: *See*—
Brooks, Ralph J.; and Mannices, George F., 4,338,988, Cl. 152-216.000.

Mao, Ho-Kwang: *See*—
Bell, Peter M.; and Mao, Ho-Kwang, 4,339,252, Cl. 62-35.000.

Marcantonio, Gabriel; and Macklem, David M., to Northern Telecom Limited. RF Shielding support for stacked electrical circuit boards. 4,339,628, Cl. 174-35.00R.

March, Adrian A. C., to Solartron Electronic Group Limited. Optical apparatus for controlling the distribution of illumination. 4,339,177, Cl. 350-431.000.

Marchand, William C. Gas turbine combustion system utilizing renewable and non-critical solid fuels with residue remover to minimize environmental pollution. 4,338,782, Cl. 60-39.46S.

Marcus, Erich: *See*—
Decker, Quintin W.; Marcus, Erich; and Zika, Harry T., 4,339,236, Cl. 8-137.000.

Marcus, Robert; Gefter, Warren B.; and Miller, Wallace T. Dispensing package for nipple markers. 4,339,035, Cl. 206-370.000.

Marcy Gymnasium Equipment Co.: *See*—
Uyeda, Tim M.; and Mahnke, Parker E., 4,339,125, Cl. 272-118.000.

Marenin, George B., to International Business Machines Corporation. Function integrated, shared ALU processor apparatus and method. 4,339,793, Cl. 364-200.000.

Maresca, Louis M., to Union Carbide Corporation. Aromatic polymers containing ketone groups. 4,339,568, Cl. 528-126.000.

Margetts, Hugh G., to Lucas Industries Limited. Servo boosters for vehicle braking systems. 4,338,854, Cl. 91-369.00A.

Marissen, Roelof H.; and Beune, Joannes H., to Wavin B.V. Plastic pipe provided with a groove. 4,338,716, Cl. 29-456.000.

Marletta, Gianfranco. Rollable device for receiving a user's limbs during exercise. 4,339,126, Cl. 272-127.000.

Marquess, Richard D., to Systron-Donner Corporation. Accelerometer including an overall arrangement for reducing temperature related errors. 4,338,819, Cl. 73-497.000.

Martin, Chloeta F.: *See*—
Martin, Theodore O., Jr., 4,339,506, Cl. 428-519.000.

Martin, David C.: *See*—
Doyle, Thomas E.; Hauser, Daniel; Hayes, Michael D.; and Martin, David C., 4,339,653, Cl. 219-99.000.

Martin, Jean-Pierre: *See*—
Herledan, Jean-Rene; Le Dieu, Bernard; Martin, Jean-Pierre; and Quemere, Daniel, 4,339,815, Cl. 370-58.000.

Martin, John K., to Vitro Tec Fideicomiso. Method for blow molding and cooling hollow glassware. 4,339,258, Cl. 65-79.000.

Martin, John K., to Vitro Tec Fideicomiso. Gob feeder chutes for glass molding machines. 4,339,263, Cl. 65-225.000.

Martin, Larry J.; and Gaddis, John H. Pipe fitter's quick square. 4,338,725, Cl. 33-174.00N.

Martin, Leonard G.; and Leb, Herbert S. Lip shield and treatment device. 4,338,928, Cl. 128-136.000.

Martin, Richard L.; and Purdy, Evelyn W., to Petrolite Corporation. Corrosion inhibitors for limited oxygen systems. 4,339,349, Cl. 252-389.00A.

Martin, Theodore O., Jr., to Martin, Chloeta F. Diffusion resistant rubber liner and laminates formed therefrom. 4,339,506, Cl. 428-519.000.

Martonfi, Joseph, Sr. Stove construction. 4,338,915, Cl. 126-163.00A.

Maruchi, Sachio: *See*—
Shibano, Tomishi; Maruchi, Sachio; Yakan, Koji; Kobayashi, Tadashi; and Akimoto, Saburo, 4,339,485, Cl. 428-40.000.

Maruyama, Seiichiro: *See*—
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Kawasaki, Hiroyuki, 4,339,555, Cl. 525-66.000.

Marvin Glass & Associates: *See*—
Breslow, Jeffrey D.; Imatt, Alex; and Oberth, Christian H., 4,339,135, Cl. 273-237.000.

Masaki, Mitsuo; Yamanaka, Toru; and Kinoshita, Taketoshi, to Nippon Chemiphar Co., Ltd. N-Acylcarnosine aluminum salts. 4,339,378, Cl. 260-112.50R.

Masaki, Mitsuo; Yamanaka, Toru; Yoshioka, Mitsuko; and Okai, Kazuki, to Nippon Chemiphar Co., Ltd. N-Acrylcarnosine aluminum salts. 4,339,379, Cl. 260-112.50R.

Mase, Syunzo: *See*—
Matsuzawa, Soichiro; and Mase, Syunzo, 4,339,301, Cl. 156-603.000.

Mashita, Kentaro; and Hanji, Katsumi, to Sumitomo Chemical Company, Limited. Process for producing olefin polymers. 4,339,351, Cl. 252-429.00B.

Mason, Edward M., to Lee Engineering, Inc. Rotary actuator for valve. 4,338,857, Cl. 92-62.000.

Mason, Kenneth R.; and Day, Edward G., to United Technologies Corporation. Fluidized bed with sloped aperture plate. 4,338,878, Cl. 118-429.000.

Masumoto, Tsuyoshi: *See*—
Hashimoto, Koji; Masumoto, Tsuyoshi; Hara, Motoi; Asami, Katsuhiko; and Sakiyama, Kazutaka, 4,339,270, Cl. 148-403.000.

Mathis, Melwyn L.: *See*—
Warner, Bert J.; Mathis, Melwyn L.; and Johnson, Warren F., 4,339,152, Cl. 299-5.000.

Matsuda, Yoshio, to Yoshida Kogyo K.K. Velvet-type fastener web. 4,338,800, Cl. 66-194.000.

Matsui, Isamu; and Suganuma, Buro, to Murata Kikai Kabushiki Kaisha. Cop supplying method for automatic winding machine. 4,339,090, Cl. 242-35.50A.

Matsukawa, Masao: *See*—
Mino, Hisashi; Matsukawa, Masao; and Nagashima, Minematsu, 4,339,492, Cl. 428-320.400.

Matsumoto, Fumio; Hayami, Satohiro; Haratani, Tsutomu; Takashima, Kunihide; and Kikuma, Toshio, to Nippon Steel Corporation. Process for producing grain-oriented silicon steel strip. 4,339,287, Cl. 148-111.000.

Matsumoto, Masafumi; and Kotani, Matahira, to Sharp Kabushiki Kaisha. Compact plunger pump. 4,339,761, Cl. 346-75.000.

Matsumoto, Susumu: *See*—
Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, 4,339,149, Cl. 297-250.000.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, to Nippon Shinyaku Co., Ltd. Method for the production of 2-hydroxymethyl-3,4,5-trihydroxy piperidine and the corresponding N-methyl derivative. 4,339,585, Cl. 546-242.000.

Matsunaga, Fujihisa: *See*—
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Saito, Mitsuru; Karatani, Yuji; Sakurai, Wataru; and Nobuta, Ken'ichi, 4,339,708, Cl. 324-54.000.
Yamanaka, Haruyoshi; and Kazumura, Masaru, 4,338,877, Cl. 118-421.000.
Yamanaka, Haruyoshi; and Kazumura, Masaru, 4,339,689, Cl. 313-499.000.

Matsushita Electric Works, Ltd.: *See*—
Ono, Kenji; Nobutoki, Kazuhiro; and Sauer, Hans, 4,339,735, Cl. 335-119.000.

Matsushita, Hideo: *See*—
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, 4,338,873, Cl. 112-262.100.

Matsuura, Tsuyoshi; Aihara, Mamoru; Takahashi, Yutaka; and Nakajima, Yoshio, to Olympus Optical Company Ltd. Photographing apparatus. 4,339,187, Cl. 354-173.000.

Matsuzawa, Soichiro; and Mase, Syunzo, to NGK Insulators, Ltd. Method for producing a single crystal of ferrite. 4,339,301, Cl. 156-603.000.

Matthews, Gerald N.; and Sanders, Frank H., to General Electric Company. Ultrasonic dip soldering process. 4,339,066, Cl. 228-183.000.

Maurer, Glen: *See*—
Barton, C. Dickinson; and Maurer, Glen, 4,339,099, Cl. 248-101.000.

Mawhinney, Daniel D., to RCA Corporation. Vehicle identification system. 4,339,753, Cl. 343-6.5SS.

May, Adolf: *See*—
Hoffmann, Erich; Wagemann, Wolfgang; Tauber, Gunther; May, Adolf; and Bucking, Hans-Walter, 4,339,391, Cl. 260-401.000.

May, Amos. Cable laying apparatus. 4,339,096, Cl. 242-86.50R.

May, Francis A., to Consolidation Coal Company. Bearing seal for a drill head assembly. 4,339,161, Cl. 308-187.100.

Maybee, Richard C. Burglar alarm. 4,339,747, Cl. 340-547.000.

Maycock, Ian C., to Automotive Products Limited. Twin plate friction clutches. 4,339,023, Cl. 192-70.250.

Mayer, Dietmar: *See*—
Rauchschwalbe, Gunter; Mannes, Karl; and Mayer, Dietmar, 4,339,396, Cl. 260-543.00R.

Mazzini, Mazzino. Control device for reciprocating grippers in shuttleless looms. 4,338,974, Cl. 139-449.000.

McBride, Roy T. Predator control toxic collar. 4,338,886, Cl. 119-106.000.

McCabe, Francis J., to United States of America, Energy. Universal link bar operator and actuator for rotating blade air, smoke, and fire dampers. 4,338,967, Cl. 137-601.000.

McCabe, Ralph P., to Colt Industries Operating Corp. Apparatus and system for controlling the air-fuel ratio supplied to a combustion engine. 4,338,901, Cl. 123-440.000.

McCary, Richard O.: *See*—
Wang, Jish M.; and McCary, Richard O., 4,339,760, Cl. 346-74.500.

McClellan, Thomas R.: *See*—
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., 4,339,343, Cl. 252-182.000.

McClure, John E.: *See*—
Goldstein, Allan L.; McClure, John E.; and Wang, Su-Sun, 4,339,427, Cl. 424-1.000.

McCombie, Alan K., to Molins, Ltd. Apparatus for feeding articles. 4,339,025, Cl. 198-347.000.

McCord, James W. Vapor generating and recovering apparatus. 4,339,283, Cl. 134-12.000.

McDaniel, Max P., to Phillips Petroleum Company. Polymerization using silica from single phase controlled hydrolysis of silicate ester. 4,339,559, Cl. 526-106.000.

McDonie, Arthur F.; and Miller, William K., to RCA Corporation. Method of making potassium, cesium, rubidium, antimony photocathode. 4,339,469, Cl. 427-10.000.

McDonnell Douglas Corporation: *See*—
Lascelles, Daniel J.; and Walker, Jack M., 4,339,638, Cl. 200-52.00R.

McDonough Manufacturing Company: *See*—
Detjen, Robert K., 4,338,986, Cl. 144-39.000.

McGary, Terry J.: *See*—
Kartinos, Nicholas J.; McGary, Terry J.; and Nolph, Karl D., 4,339,433, Cl. 424-78.000.

McGrail, Patrick T.: *See*—
Elmes, Terence D. J.; and McGrail, Patrick T., 4,339,531, Cl. 430-535.000.

McHugh, James D. Sealing arrangement for hot bearing housings. 4,339,160, Cl. 308-36.300.

McHugh, Robert J.: *See*—
Kwatnoski, Richard; and McHugh, Robert J., 4,338,862, Cl. 102-516.000.

McLaren, John W.: *See*—
Peil, Charles A.; and McLaren, John W., 4,339,040, Cl. 206-599.000.

McLaughlin, Ivan P.: *See*—
Barker, John C.; and McLaughlin, Ivan P., 4,339,489, Cl. 428-167.000.

McMahon, Karen M.: *See*—
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,339,683, Cl. 310-364.000.

McMillen, Bruce A.; and Cortier, Beverly A. Garbage bag holder. 4,339,048, Cl. 220-18.000.

McNamara, Daniel E.; and Sinatra, Gerald, to GMSR Ortho Enterprises, Inc. Back support construction. 4,339,150, Cl. 297-284.000.

McNeil Corporation: *See*—
Conery, William J.; and Kiplinger, Terry L., 4,339,231, Cl. 417-40.000.

McNully, Joseph B. Manual tool for stretching wire having diverging handles. 4,338,977, Cl. 140-70.000.

McQuay, Edgar E., to General Electric Company. Bushing design with crimped adapter for retaining conductor. 4,339,630, Cl. 174-152.00R.

McSparran, Lloyd W.; and Smith, Russell M., to General Electric Company. Series parallel transition for power supply. 4,339,704, Cl. 322-90.000.

Meacle, Thomas, to Powers Manufacturing Co. Method and apparatus for checkweighing containers. 4,339,028, Cl. 198-427.000.

Mead Corporation, The: *See*—
Wood, Prentice J., 4,339,032, Cl. 206-158.000.

Meares, Claude F.; and Anderson, Leslie D., to University of California, Regents of the. Bleomycin analog. 4,339,426, Cl. 424-1.000.

Medichemie AG: *See*—
Hara, Hiroto; and Narimatsu, Akihiro, 4,339,452, Cl. 424-250.000.

Medtronic, Inc.: *See*—
Williams, Terrell M., 4,338,947, Cl. 128-642.000.

Mego Afek Industrial Measuring Instruments: *See*—
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmuter, Shimshon, 4,338,923, Cl. 128-24.00R.

Meiattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, to Instituto Sieroterapico e Vaccinogeno Toscano "Sclavo" S.p.A. Device for performing measurements on fluids, directly in the sample container. 4,339,317, Cl. 204-195.00B.

Meibauer, Robert H. Dental prophylaxis device and process. 4,338,957, Cl. 132-91.000.

Meibuhr, Stuart G.: *See*—
Witherspoon, Romeo R.; and Meibuhr, Stuart G., 4,339,512, Cl. 429-206.000.

Meier, Peter E.; Gordon, Otto W.; and Buttiker, Gero, to Ametex AG. Process for producing a fiber-reinforced, hydraulically setting composition, the composition produced and the use thereof. 4,339,273, Cl. 106-90.000.

Melard Manufacturing Corporation: *See*—
Shames, Sidney J.; and Shames, Harold, 4,338,731, Cl. 34-82.000.

Melwisch, Harald: *See*—
Langer, Erich; Mach, Helmut; and Melwisch, Harald, 4,339,776, Cl. 360-69.000.

Menges, Horst: *See*—
Bremer, Clemens; and Menges, Horst, 4,338,851, Cl. 89-33.0BB.

Mennicke, Winfried: *See*—
Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schundehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.

Mercier, Andre, to Fives-Cail Babcock. Process of producing a seeding magma for seeding a solution of a crystallizable product. 4,339,280, Cl. 127-56.000.

Mercier Corporation, The: *See*—
Harris, Morton E., 4,339,308, Cl. 202-263.000.

Mercier, Jacques H., to Normand Trust. High flow accumulator device having poppet valve control means. 4,338,968, Cl. 138-30.000.

Merck & Co., Inc.: *See*—
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.
Racciato, Joseph S., 4,339,239, Cl. 8-561.000.

Merk, Wolfgang: *See*—
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,339,578, Cl. 544-207.000.

Merle, Jean-Pierre: *See*—
Branlard, Paul; and Merle, Jean-Pierre, 4,339,372, Cl. 524-169.000.

Merry, Ted G.: *See*—
Gilligan, Patrick J.; and Merry, Ted G., 4,338,762, Cl. 53-244.000.

Metallgesellschaft AG: *See*—
Reitz, Johannes, 4,338,858, Cl. 92-222.000.

Metallwerk Max Brose GmbH and Company: *See*—
Hess, Peter; and Rampel, Hans, 4,338,747, Cl. 49-349.000.

Meyer, Hans R.: *See*—
Luthi, Christian; Meyer, Hans R.; and Weber, Kurt, 4,339,393, Cl. 260-459.00A.

Meyer, Manfred: *See*—
Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, 4,338,899, Cl. 123-339.000.

Meyers, Elwood J.; and Glynn, Thomas A., to Cummins Engine Company, Inc. Rotary electrically actuated device. 4,339,737, Cl. 335-272.000.

Michael, Earl C.: *See*—
LeBegue, Maurice K.; and Michael, Earl C., 4,339,153, Cl. 299-59.000.

Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., to Micro Consultants Limited. Video frame store and real time processing system. 4,339,803, Cl. 364-724.000.

Michaelis, Klaus-Peter: *See*—
Wehner, Wolfgang; Michaelis, Klaus-Peter; and Schneider, Rainer, 4,339,383, Cl. 548-419.000.

Michel, Herbert: *See*—
Winzer, Gerhard; Reichelt, Achim; and Michel, Herbert, 4,339,290, Cl. 156-159.000.

Michel, Wolfgang: *See*—
Lauterbach, Uwe; and Michel, Wolfgang, 4,339,491, Cl. 428-317.700.
Michelet, Jacques: *See*—
Delassus, Jean; de Lamberterie, Bertrand; and Michelet, Jacques, 4,339,625, Cl. 373-158.000.
Micro Consultants Limited: *See*—
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,339,803, Cl. 364-724.000.
Sydor, Philip R.; and Brooker, Graham J., 4,339,722, Cl. 328-38.000.
Microlec, S.A.: *See*—
Delmas, Jean R., 4,338,722, Cl. 33-174.00L.
Microlife Technics, Inc.: *See*—
Vedamuthu, Ebenezer R., 4,339,464, Cl. 426-43.000.
Miglin, Bruce P.: *See*—
Krueger, Robert H.; Kelly, Robert R.; Hempel, Rudolf M.; and Miglin, Bruce P., 4,338,959, Cl. 137-93.000.
Miki, Takao: *See*—
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
Mikuni Kogyo Kabushiki Kaisha: *See*—
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
Milan, John M.: *See*—
Hammers, David E.; and Milan, John M., 4,339,754, Cl. 343-7.700.
Milburn, William W., Jr., to O'Rourke, Thomas W. Unitary structure and method for utilizing solar energy. 4,338,918, Cl. 126-430.000.
Miles, Frank N. Tool box. 4,338,987, Cl. 144-285.000.
Miles Laboratories, Inc.: *See*—
Magers, Thomas A.; and Tabb, David L., 4,339,242, Cl. 23-230.00B.
Magers, Thomas A.; and Tabb, David L., 4,339,243, Cl. 23-230.00B.
Van Dyke, John W., Jr., 4,339,582, Cl. 546-112.000.
Miller, Donald A. Conveyor roller bearings. 4,339,159, Cl. 308-20.000.
Miller, Edward A., to RCA Corporation. RF Heating coil construction for stack of susceptors. 4,339,645, Cl. 219-10.49R.
Miller, Fred R. Pistol sight base bridge. 4,338,740, Cl. 42-1.0SR.
Miller, Jo. Pressure injection of bone cement apparatus and method. 4,338,925, Cl. 128-92.00E.
Miller, Wallace T.: *See*—
Marcus, Robert; Gefter, Warren B.; and Miller, Wallace T., 4,339,035, Cl. 206-370.000.
Miller, William K.: *See*—
McDonie, Arthur F.; and Miller, William K., 4,339,469, Cl. 427-10.000.
Minato, Hitoshi: *See*—
Ko'Oka, Yoshinobu; Munekage, Mariko; and Minato, Hitoshi, 4,339,575, Cl. 544-20.000.
Ministry of International Trade & Industry: *See*—
Nakao, Yukimichi; and Fujishige, Shoei, 4,339,345, Cl. 252-309.000.
Shimizu, Toshimi; Fujishige, Shoei; and Okada, Akira, 4,339,360, Cl. 524-28.000.
Minks, Werner, to International Standard Electric Corporation. Encased miniature relay. 4,339,734, Cl. 335-78.000.
Minnesota Mining and Manufacturing Company: *See*—
Doering, Arlin B., 4,339,037, Cl. 206-444.000.
Gruczelak, Norman P., 4,339,777, Cl. 360-97.000.
Minnis, Ralph L.: *See*—
Ragas, Frank J.; Minnis, Ralph L.; and Beauchamp, Gerson E., 4,339,505, Cl. 428-514.000.
Mino, Hisashi; Matsukawa, Masao; and Nagashima, Minematsu, to Sanyo-Kokusaku Pulp Co., Ltd. Heat-sensitive recording material. 4,339,492, Cl. 428-320.400.
Minolta Camera Kabushiki Kaisha: *See*—
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, 4,338,880, Cl. 118-652.000.
Ueda, Nobuo; and Yamagishi, Seiichi, 4,339,182, Cl. 353-27.00R.
Yamazaki, Keiji, 4,339,186, Cl. 354-38.000.
Miro, Frank: *See*—
Luebbe, Ray H., Jr.; Miro, Frank; and Palermiti, Frank M., 4,339,504, Cl. 428-513.000.
Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, to Kyowa Hakko Kogyo Kabushiki Kaisha. Process for mass propagation of plantlets. 4,338,745, Cl. 47-58.000.
Mishima Paper Co., Ltd.: *See*—
Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, 4,339,143, Cl. 282-27.500.
Misiorny, Alfons: *See*—
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., 4,339,445, Cl. 424-212.000.
Mitani, Megumu: *See*—
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, 4,339,802, Cl. 364-483.000.
Mitchell, Daniel M., to Rockwell International Corporation. DC to low frequency inverter with pulse width modulated high frequency link. 4,339,791, Cl. 363-41.000.
Mitchell, Elston. Axle-mounted wheel exercising device. 4,339,127, Cl. 272-127.000.
Mitsubishi Chemical Industries, Ltd.: *See*—
Hasuo, Masayoshi; Suga, Yoshinori; Kojima, Kazuhisa; and Suzuki, Masatoshi, 4,339,557, Cl. 525-247.000.
Kageyama, Yoichi; Aiura, Masato; and Moriya, Kikuo, 4,339,329, Cl. 208-10.000.
Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,339,315, Cl. 204-129.850.
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, 4,339,580, Cl. 544-360.000.
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Kawasaki, Hiroyuki, 4,339,555, Cl. 525-66.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,339,656, Cl. 219-494.000.
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
Tanaka, Yutaka; Yatomi, Takeshi; and Ozaki, Yoshio, 4,339,650, Cl. 219-69.00G.
Mitsubishi Gas Chemical Company, Inc.: *See*—
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,339,597, Cl. 560-205.000.
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See*—
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.
Mitsubishi Rayon Company, Ltd.: *See*—
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,339,474, Cl. 427-54.100.
Yoshioka, Naonori; Tada, Hisashi; and Kashiyama, Setsuo, 4,339,490, Cl. 428-213.000.
Mitsui Petrochemical Industries Ltd.: *See*—
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.
Mitzel, Wilhelm; Bernardi, Herbert; and Duschek, Rudolf, to G.A.O. Gesellschaft fuer Automation und Organisation mbH. Portable input magazine. 4,339,221, Cl. 414-114.000.
Miura, Junkichi: *See*—
Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, 4,338,811, Cl. 73-23.100.
Miura, Masami, to Nippon Electric Co., Ltd. Demodulator of angle modulated signal operable by low power voltage. 4,339,726, Cl. 329-103.000.
Miwa, Yoshihisa: *See*—
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, to Hitachi, Ltd. Method and apparatus for diagnosis of disease. 4,338,811, Cl. 73-23.100.
Miyaguchi, Akinori: *See*—
Chino, Yasuyoshi; and Miyaguchi, Akinori, 4,339,367, Cl. 525-131.000.
Miyahara, Akimitsu, to Rohm and Haas Company. Porous cemented ion exchange resins wherein the beads are cohered to one another in polymer matrix. 4,339,548, Cl. 521-28.000.
Miyamoto, Takuji: *See*—
Komura, Tamotsu; Miyamoto, Takuji; and Nakanaga, Hiroshi, 4,339,558, Cl. 525-524.000.
Mladek, Rolf: *See*—
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Mobil Oil Corporation: *See*—
Huang, Tracy J.; and Haag, Werner O., 4,339,606, Cl. 568-396.000.
Warner, Bert J.; Mathis, Melwyn L.; and Johnson, Warren F., 4,339,152, Cl. 299-5.000.
Weiner, Milton L., 4,339,493, Cl. 428-349.000.
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Weisz, Paul B.; and Frilette, Vincent J., 4,339,353, Cl. 252-455.00Z.
Molins, Ltd.: *See*—
McCombie, Alan K., 4,339,025, Cl. 198-347.000.
Moller, Eckhard: *See*—
Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, 4,339,570, Cl. 528-272.000.
Molson Companies, Limited, The: *See*—
Van Gheluwe, George E. A.; Weaver, Robert L.; Dadic, Miroslav; and Knudsen, Finn B., 4,339,466, Cl. 426-430.000.
Monaghan, Kevin J.: *See*—
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Monma, Shigeki: *See*—
Morimiya, Osami; Suzuki, Setsuo; and Monma, Shigeki, 4,339,691, Cl. 315-111.210.
Monsanto Company: *See*—
Baer, Massimo, 4,339,556, Cl. 523-220.000.
Wilder, Gene R., 4,339,577, Cl. 544-197.000.
Monticelli, Dennis M., to National Semiconductor Corporation. Radio receiver signal amplifier and AGC circuit. 4,339,728, Cl. 330-254.000.
Moog Inc.: *See*—
Garnjost, Kenneth D.; and Ballard, John S., 4,338,965, Cl. 137-554.000.
Moore, Charles D.: *See*—
Basch, William J.; and Moore, Charles D., 4,339,662, Cl. 250-229.000.
Moore, Thomas F., to Atlantic Richfield Company. Method for loading of uranyl ion complexes on ion exchange resin. 4,339,414, Cl. 423-7.000.

Moore, Walter T., to Veda, Inc. Solar powered chemical processing method and apparatus. 4,338,922, Cl. 126-452.000.

Morgan, Craig: *See—*
Amlani, Kish; Zink, Frederick J.; Morgan, Craig; and Ellwood, Thomas, 4,338,825, Cl. 73-862.650.

Morgan, Peter E. D., to United States of America, Energy. Preparation of powders suitable for conversion to useful β-aluminas. 4,339,511, Cl. 429-189.000.

Morgan, Peter J.; and Wyllie, Kenneth I., to International Synthetic Rubber Company, Limited, The. Monomer/solvent purification. 4,339,623, Cl. 585-867.000.

Mori, Kikuo: *See—*
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, 4,338,873, Cl. 112-262.100.

Mori, Mamoru; and Terada, Takami, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Device for adjusting inclined angle of seating surface of seat cushion. 4,339,103, Cl. 248-397.000.

Mori, Yasuki: *See—*
Sato, Moriyuki; and Mori, Yasuki, 4,339,572, Cl. 536-16.100.

Morimiya, Osami; Suzuki, Setsuo; and Monma, Shigeki, to Tokyo Shibaura Denki Kabushiki Kaisha. Discharge apparatus having hollow cathode. 4,339,691, Cl. 315-111.210.

Morishita, Masanobu; and Tanaka, Takanori, to Nippon Electric Co., Ltd. Solid-state color imaging apparatus having an excellent resolution. 4,339,771, Cl. 358-41.000.

Morita, Takayuki: *See—*
Suzuki, Osamu; Morita, Takayuki; Ushino, Masashi; and Hirano, Hideo, 4,338,778, Cl. 57-276.000.

Moriya, Kikuo: *See—*
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Morley, John O., to Imperial Chemical Industries Limited. Preparation of O-benzyl toluene. 4,339,621, Cl. 585-422.000.

Morton-Norwich Products, Inc.: *See—*
Alaimo, Robert J.; and Gray, Joseph E., 4,339,386, Cl. 549-496.000.

Moser, Phillip J.: *See—*
Bednarz, John J.; Moser, Phillip J.; and Rosenberg, Roger L., 4,339,811, Cl. 367-96.000.

Motoren-und Turbinen-Union Munchen GmbH: *See—*
Rossman, Axel, 4,339,229, Cl. 416-218.000.

Motorola Inc.: *See—*
Bolinger, Randy L., 4,338,903, Cl. 123-476.000.
Hunninghaus, Roy E.; and Bolinger, Randy L., 4,338,813, Cl. 73-116.000.
Jarrett, Robert B.; and LoCascio, James J., 4,339,669, Cl. 307-228.000.
Jason, Barry L.; Hall, Scott M.; and Valley, Richard L., 4,339,729, Cl. 330-294.000.
North, Robert P., 4,339,808, Cl. 364-900.000.
Predina, Joseph P.; and Jasper, Steven C., 4,339,823, Cl. 375-20.000.

Mottine, John J., Jr.: *See—*
Kanotz, William M.; Mottine, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., 4,339,298, Cl. 156-498.000.

Muchnik, Shimon: *See—*
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmuter, Shimshon, 4,338,923, Cl. 128-24.00R.

Mueller, Ruediger; Pomper, Michael; and Leipold, Ludwig, to Siemens Aktiengesellschaft. Monolithically integrated circuit of high dielectric strength for electrically coupling isolated circuits. 4,339,668, Cl. 307-149.000.

Muller, Erhard: *See—*
Knackstedt, Hans-Gunther; Laug, Reiner; and Muller, Erhard, 4,339,411, Cl. 376-272.000.

Muller, Frohmut: *See—*
Vogel, Sonke; and Muller, Frohmut, 4,339,012, Cl. 177-262.000.

Mullet, Willis J. Door panel and manner of making same. 4,339,487, Cl. 428-71.000.

Multifastener Corporation: *See—*
Steward, John H.; and Ladouceur, Harold A., 4,338,694, Cl. 10-72.00R.

Multner, James H., to AMF Incorporated. Bowling ball path indicator with ROM ball path selector. 4,339,128, Cl. 273-54.00D.

Mundy, Joseph L.: *See—*
Barber, William D.; Cipolla, Thomas M.; and Mundy, Joseph L., 4,339,745, Cl. 340-146.30F.

Munekage, Mariko: *See—*
Ko'Oka, Yoshinobu; Munekage, Mariko; and Minato, Hitoshi, 4,339,575, Cl. 544-20.000.

Muntwyler, Rene'; and Burdeska, Kurt, to Ciba-Geigy Corporation. Antimicrobial 3-hydroxydiphenyl ethers. 4,339,462, Cl. 424-341.000.

Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, to Tokyo Shibaura Electric Co., Ltd. Surface-treating agent adapted for intermediate products of a semiconductor device. 4,339,340, Cl. 252-79.500.

Murata, Junya, to Kabushiki Kaisha Kawai Gakki Seisakusho. Tone source circuit for electronic musical instruments. 4,338,844, Cl. 84-1.010.

Murata Kikai Kabushiki Kaisha: *See—*
Matsui, Isamu; and Suganuma, Buro, 4,339,090, Cl. 242-35.50A.

Murata Manufacturing Co., Ltd.: *See—*
Sakabe, Yukio; Hamaji, Yukio; and Komatsu, Hiroshi, 4,339,544, Cl. 501-136.000.

Murayama, Norio: *See—*
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaoki, 4,339,794, Cl. 364-200.000.

Murayama, Seiichi: *See—*
Yasuda, Makoto; Murayama, Seiichi; and Ito, Masaru, 4,339,201, Cl. 356-312.000.

Murmann, Gunter, to Cherry Electrical Products Corporation. Push-button key switch. 4,339,643, Cl. 200-159.00A.

Murphy, Frank H.: *See—*
Seymour, Raymond K.; Murphy, Frank H.; and Vergnano, Lelio C., 4,339,642, Cl. 200-153.00G.

Murray, Donald L., to Allis-Chalmers Corporation. Aggregate storage anti-segregation arrangement for a storage bin. 4,339,203, Cl. 366-9.000.

Murray, Pat L.: *See—*
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., 4,339,343, Cl. 252-182.000.

Muschaweck, Roman: *See—*
Sturm, Karl; and Muschaweck, Roman, 4,339,446, Cl. 424-228.000.

Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, to Bayer Aktiengesellschaft. Process for the production of polyesters. 4,339,570, Cl. 528-272.000.

Musiachenko, Valentin F.: *See—*
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.

Musikas, Claude: *See—*
Fitoussi, Richard; and Musikas, Claude, 4,339,416, Cl. 423-10.000.

Muto, Rudolph: *See—*
Cauchon, Dorothy O.; and Muto, Rudolph, 4,338,721, Cl. 30-322.000.

Mykleby, Laurie G., to First National Packaging Co., Inc. Impact resistant foam cushioned packages. 4,339,039, Cl. 206-523.000.

Nagasaka, Yasumasa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Auto bumper and its manufacturing process. 4,339,144, Cl. 293-120.000.

Nagasawa, Masakazu: *See—*
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.

Nagashima, Minematsu: *See—*
Mino, Hisashi; Matsukawa, Masao; and Nagashima, Minematsu, 4,339,492, Cl. 428-320.400.

Nagatomo, Katsuaki: *See—*
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, 4,339,330, Cl. 208-251.00R.

Naigai Ink. Mgf. Co., Ltd.: *See—*
Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, 4,339,143, Cl. 282-27.500.

Naito, Tsutomo: *See—*
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,339,619, Cl. 570-183.000.

Nakagawa, Hiroaki: *See—*
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.

Nakagima, Yoshikazu, to Kabushiki Kaisha Mikuni Seisakusho. Composite material compositions using wastepaper and method of producing same. 4,339,363, Cl. 524-34.000.

Nakahama, Seiichi: *See—*
Yamazaki, Noboru; Nakahama, Seiichi; and Yamaguchi, Kazuo, 4,339,590, Cl. 549-11.000.

Nakajima, Tadashi: *See—*
Takemoto, Tsunematsu; Arichi, Shigeru; Arihara, Shigenobu; Nakajima, Tadashi; Okuhira, Megumi; and Uchida, Yoshihiro, 4,339,442, Cl. 424-182.000.

Nakajima, Yoshio: *See—*
Matsuura, Tsuyoshi; Aihara, Mamoru; Takahashi, Yutaka; and Nakajima, Yoshio, 4,339,187, Cl. 354-173.000.

Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha; Mitsubishi Denki Kabushiki Kaisha; and Mikuni Kogyo Kabushiki Kaisha. Fuel supplying device for internal combustion engine. 4,338,902, Cl. 123-454.000.

Nakamura, Junichi; Hata, Seiji; and Yamasaki, Iwao, to Tokyo Shibaura Denki Kabushiki Kaisha. Transistor device. 4,339,765, Cl. 357-36.000.

Nakamura, Matsuo: *See—*
Takahashi, Yasuhiro; Ohinata, Yoshiharu; and Nakamura, Matsuo, 4,339,293, Cl. 156-227.000.

Nakanaga, Hiroshi: *See—*
Komura, Tamotsu; Miyamoto, Takuji; and Nakanaga, Hiroshi, 4,339,558, Cl. 525-524.000.

Nakane, Shoji: *See—*
Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, 4,339,607, Cl. 568-426.000.

Nakanishi, Koji: *See—*
Kusumi, Takenori; and Nakanishi, Koji, 4,339,588, Cl. 548-247.000.

Nakano, Yoshiyuki, to Nippon Kogaku K.K. Film advance restraining device of a camera. 4,339,189, Cl. 354-173.000.

Nakao, Shinroku; Ishii, Yoshiyasu; Matsumoto, Susumu; and Hoshino, Kiyoshi, to Combi Co., Ltd. Child's automotive safety seat. 4,339,149, Cl. 297-250.000.

Nakao, Yukimichi; and Fujishige, Shoei, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry.

Method for manufacture of nickel boride colloid. 4,339,345, Cl. 252-309.000.

Nakasato, Kouichi: *See—*
Hinosugi, Misturu; and Nakasato, Kouichi, 4,339,475, Cl. 427-64.000.

Nakatsu, Kanji, to Queen's University at Kingston. Collector controller for chromatograph. 4,339,759, Cl. 346-33.00R.

Nakauchi, Kenji; and Terasita, Takaaki, to Fuji Photo Film Co., Ltd. Image information input system. 4,339,185, Cl. 354-31.000.

Nakayama, Heihachiro: *See—*
Ohmori, Koichiro; Tashiro, Yasuo; and Nakayama, Heihachiro, 4,338,765, Cl. 53-452.000.

Nalco Chemical Company: *See—*
Reven, Frederick V., 4,339,542, Cl. 501-109.000.

Nametkin, Nikolai S.: *See—*
Guselnikov, Leonid E.; Polyakov, Jury P.; Volnina, Elvira A.; and Nametkin, Nikolai S., 4,339,562, Cl. 528-14.000.

Narimatsu, Akihiro: *See—*
Hara, Hiroto; and Narimatsu, Akihiro, 4,339,452, Cl. 424-250.000.

National Can Corporation: *See—*
Cochran, Donald D., 4,338,767, Cl. 53-492.000.

National Mine Service Company: *See—*
LeBegue, Maurice K.; and Michael, Earl C., 4,339,153, Cl. 299-59.000.

National Research Development Corporation: *See—*
Grover, Rajeev K.; and Gillam, Eric, 4,339,272, Cl. 75-240.000.

National Semiconductor Corporation: *See—*
Monticelli, Dennis M., 4,339,728, Cl. 330-254.000.

National-Standard Company: *See—*
Kirst, Robert J.; and Oppenhuisen, Frederick H., 4,338,954, Cl. 130-27.00G.

National Starch & Chemical Corporation: *See—*
Lindemann, Martin K., 4,339,552, Cl. 524-459.000.

Navarre, Rene' A. Self-locking fastener. 4,339,218, Cl. 411-419.000.

Navarro, Ramon. Reusable bracket assembly for concrete form. 4,339,106, Cl. 249-219.00R.

NCR Corporation: *See—*
Biedermann, Horst H., 4,339,208, Cl. 400-124.000.
Davison, Alan B.; and Lewis, Wayne J., 4,339,804, Cl. 364-900.000.

Neff, Georg, to Bernstorf, E. Gunter. Fuel-consumption monitor for diesel engine. 4,338,816, Cl. 73-119.00A.

Nelson, Byron. Device and method for delivering solid medication to an eye. 4,338,936, Cl. 128-266.000.

Neri, Paolo: *See—*
Meiattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, 4,339,317, Cl. 204-195.00B.

Neubauer, Harry: *See—*
Greten, Berndt; Neubauer, Harry; Seeger, Gunter; Bucking, Gunter; Komp, Hans J.; and Oldemeyer, Wilhelm, 4,339,478, Cl. 427-212.000.

Neubauer, Rudolf: *See—*
Sprintschnik, Gerhard; Neubauer, Rudolf; and Buhr, Gerhard, 4,339,530, Cl. 430-331.000.

Neumeyer, Martin J., to United States of America, Army. Means to minimize the backlash of meshing gears. 4,338,853, Cl. 89-41.00R.

New York University: *See—*
Abele, Manlio G.; Chase, Norman E.; and Mair, Gareth A., 4,339,799, Cl. 364-414.000.

Newco Synthetics International Inc.: *See—*
Pascau, Jean-Maurice, 4,339,362, Cl. 524-5.000.

NGK Insulators, Ltd.: *See—*
Matsuzawa, Soichiro; and Mase, Syunzo, 4,339,301, Cl. 156-603.000.

Nichols, James F.; and Van Bemmel, Peter P. Method of compensating seismic data for effects of frequency dependent attenuation. 4,339,810, Cl. 367-49.000.

Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., to Great Lakes Chemical Corporation. Intumescent composition. 4,339,357, Cl. 252-606.000.

Niedermeyer, William P., to Paper Converting Machine Company. Embossing method to avoid nesting in convolutely wound rolls and product. 4,339,088, Cl. 242-1.000.

Nihashi, Yoshiyuki: *See—*
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaoki, 4,339,794, Cl. 364-200.000.

Nihira, Yasuo; and Hosoda, Takuya, to Ando Electric Co., Ltd. Electrostatic voltmeter. 4,339,721, Cl. 324-457.000.

Niijima, Kenji: *See—*
Kosuda, Hiroyuki; and Niijima, Kenji, 4,339,021, Cl. 191-50.000.

Nijhuis, Johan W., to Machinefabriek G.J. Nijhuis B.V. Apparatus for electrically stunning animals to be slaughtered. 4,338,700, Cl. 17-1.00E.

Nippon Chemiphar Co., Ltd.: *See—*
Masaki, Mitsuo; Yamanaka, Toru; and Kinoshita, Taketoshi, 4,339,378, Cl. 260-112.50R.
Masaki, Mitsuo; Yamanaka, Toru; Yoshioka, Mitsuko; and Okai, Kazuki, 4,339,379, Cl. 260-112.50R.

Nippon Electric Co., Ltd.: *See—*
Hata, Masaharu; and Kato, Kotaro, 4,339,817, Cl. 370-93.000.
Ichiyoshi, Osamu, 4,339,725, Cl. 329-50.000.
Kage, Kouzou; and Yoshida, Ikio, 4,339,727, Cl. 329-106.000.
Miura, Masami, 4,339,726, Cl. 329-103.000.
Morishita, Masanobu; and Tanaka, Takanori, 4,339,771, Cl. 358-41.000.
Tanimoto, Yoshio, 4,339,824, Cl. 375-110.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Ogita, Minoru; and Kimura, Shigenobu, 4,339,826, Cl. 455-183.000.
Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, 4,339,813, Cl. 369-231.000.
Yokoyama, Kenji, 4,339,730, Cl. 330-297.000.

Nippon Kogaku K.K.: *See—*
Nakano, Yoshiyuki, 4,339,189, Cl. 354-173.000.
Utagawa, Ken; and Shirasu, Hiroshi, 4,339,665, Cl. 250-578.000.

Nippon Mining Company, Limited: *See—*
Kato, Kochi; and Uemura, Namio, 4,339,205, Cl. 366-296.000.
Kato, Koichi; and Uemura, Namio, 4,339,536, Cl. 435-142.000.

Nippon Oil Company, Limited: *See—*
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.
Yokoyama, Nobuo; and Kawabata, Nobuaki, 4,339,276, Cl. 106-271.000.

Nippon Shinyaku Co., Ltd.: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,339,585, Cl. 546-242.000.

Nippon Soken, Inc.: *See—*
Kago, Yoshiyuki; Akita, Sigeyuki; and Kotera, Masao, 4,339,713, Cl. 324-173.000.

Nippon Steel Corporation: *See—*
Matsumoto, Fumio; Hayami, Satohiro; Haratani, Tsutomu; Takashima, Kunihide; and Kikuma, Toshio, 4,339,287, Cl. 148-111.000.

Nippon Telegraph & Telephone Public Corporation: *See—*
Hata, Masaharu; and Kato, Kotaro, 4,339,817, Cl. 370-93.000.

Nippon Zeon Co., Ltd.: *See—*
Chino, Yasuyoshi; and Miyaguchi, Akinori, 4,339,367, Cl. 525-131.000.

Nishimura, Tomohiro: *See—*
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.

Nishimura, Yoshiharu: *See—*
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,339,807, Cl. 364-900.000.

Nishimura, Yukuo: *See—*
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,339,762, Cl. 346-140.00R.

Nishioka, Akira, to Pioneer Electronic Corporation. Phase control device. 4,339,631, Cl. 179-1.0GS.

Nishizawa, Eiji: *See—*
Oyama, Kohei; and Nishizawa, Eiji, 4,339,756, Cl. 343-702.000.

Nissan Motor Company, Limited: *See—*
Handa, Noritoshi, 4,338,992, Cl. 165-9.000.
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaoki, 4,339,794, Cl. 364-200.000.
Hosaka, Akio; and Higashiyama, Kazuhiro, 4,339,801, Cl. 364-431.040.
Ideta, Yasufumi, 4,338,855, Cl. 91-378.000.

Nissmo, Jim A.; Sundin, Jan A.; and Sjostrom, Lars B. Method and apparatus for controlling the temperature in greenhouses. 4,339,074, Cl. 236-47.000.

Noack, Christian: *See—*
Berth, Dieter; Hohlfeld, Gottfried; Oliva, Klaus; and Noack, Christian, 4,339,014, Cl. 180-54.00A.

Noble, Lowell A. Process for smoothing surfaces of crystalline materials. 4,339,300, Cl. 156-601.000.

Nobuta, Ken'ichi: *See—*
Saito, Mitsuru; Karatani, Yuji; Sakurai, Wataru; and Nobuta, Ken'ichi, 4,339,708, Cl. 324-54.000.

Nobutoki, Kazuhiro: *See—*
Ono, Kenji; Nobutoki, Kazuhiro; and Sauer, Hans, 4,339,735, Cl. 335-119.000.

Noeske, Heinz O., to General Electric Company. Nozzle for a puffer-type circuit breaker. 4,339,641, Cl. 200-148.00R.

Noguchi, Kohji: *See—*
Yanagihara, Yuzo; Noguchi, Kohji; Suzuki, Hiroshi; and Honda, Makoto, 4,339,500, Cl. 428-402.000.

Nojima, Masaki: *See—*
Fujita, Toshiji; Yamada, Chihiko; Terashima, Takeo; and Nojima, Masaki, 4,339,769, Cl. 358-6.000.

Nolph, Karl D.: *See—*
Kartinos, Nicholas J.; McGary, Terry J.; and Nolph, Karl D., 4,339,433, Cl. 424-78.000.

Nomura, Shoji: *See—*
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, 4,339,330, Cl. 208-251.00R.

Nordson Corporation: *See—*
Jones, Stephen H., 4,338,769, Cl. 53-509.000.

Nordstrom, Lennart: *See—*
Wiklund, Rudolf; and Nordstrom, Lennart, 4,339,664, Cl. 250-577.000.

Normand Trust: *See—*
Mercier, Jacques H., 4,338,968, Cl. 138-30.000.

North, Robert P., to Motorola, Inc. Asynchronous event prioritizing circuit. 4,339,808, Cl. 364-900.000.

Northern Telecom Limited: *See—*
Marcantonio, Gabriel; and Macklem, David M., 4,339,628, Cl. 174-35.00R.

Norton, David E. P., to Sir James Farmer Norton & Company Limited. Application of liquids to textiles. 4,338,876, Cl. 118-259.000.

Nowakowski, Lesley J.: *See—*
Robinson, Peter M.; Rakowitz, David H.; and Nowakowski, Lesley J., 4,339,371, Cl. 524-310.000.
Nuarc Company, Inc., The: *See—*
Lasecki, Robert R.; Reeve, Howard C., III; and Lindan, Nicholas O., 4,339,692, Cl. 315-277.000.
Nuclear Power Outfitters: *See—*
Jacobson, Earl B.; and Buchanan, H. F., 4,339,163, Cl. 312-1.000.
Nusser, Hermann: *See—*
Peters, Klaus-Jurgen; Bosch, Franz-Ulrich; Schindler, Herbert; and Nusser, Hermann, 4,338,815, Cl. 73-118.000.
Nutter, Dale E. Gas-liquid contact apparatus. 4,339,399, Cl. 261-112.000.
Nygren, Lennart. Lock. 4,338,805, Cl. 70-134.000.
Oana, Masao: *See—*
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,339,807, Cl. 364-900.000.
Obata, Eisuke: *See—*
Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, 4,338,943, Cl. 128-344.000.
Oberth, Christian H.: *See—*
Breslow, Jeffrey D.; Imatt, Alex; and Oberth, Christian H., 4,339,135, Cl. 273-237.000.
Obisphere Corporation Wilmington, Succursale de Collonge-Bellerive: *See—*
Weber, Eugen, 4,339,634, Cl. 200-5.00A.
Oda, Nobuyuki; and Terada, Haruyoshi, to Hooker Chemicals & Plastics Corp. Method of surface treatment of tin plated cans and tin plated steel sheets. 4,339,310, Cl. 204-38.00R.
O'Dair, James R.: *See—*
Smith, Frederick M.; and O'Dair, James R., 4,338,985, Cl. 144-34.00R.
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, to Hoechst Aktiengesellschaft. α-Amylase inhibitor from a streptomycete and process for its preparation. 4,339,436, Cl. 424-115.000.
Oganesian, Oganes V.: *See—*
Volkov, Mstislav V.; Oganesian, Oganes V.; and Povarov, Leonid A., 4,338,927, Cl. 128-92.00A.
Ogita, Minoru; and Kimura, Shigenobu, to Nippon Gakki Seizo Kabushiki Kaisha. Radio receiver having phase locked loop frequency synthesizer. 4,339,826, Cl. 455-183.000.
O'Grady Containers, Inc.: *See—*
Poteet, Wendell A., 4,339,069, Cl. 229-36.000.
Ohashi, Fumio: *See—*
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,339,619, Cl. 570-183.000.
Ohashi, Taizo: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,339,340, Cl. 252-79.500.
Ohboshi, Toshio: *See—*
Ohkoshi, Akio; Sato, Hiroki; Hatanaka, Masato; Ohboshi, Toshio; and Tanaka, Sakae, 4,339,694, Cl. 315-366.000.
O'Hern, James E., Jr. Adapter for refrigeration system access valve. 4,338,793, Cl. 62-292.000.
Ohinata, Yoshiharu: *See—*
Takahashi, Yasuhiro; Ohinata, Yoshiharu; and Nakamura, Matsuo, 4,339,293, Cl. 156-227.000.
Ohkoshi, Akio; Sato, Hiroki; Hatanaka, Masato; Ohboshi, Toshio; and Tanaka, Sakae, to Sony Corporation. Flat cathode ray tube. 4,339,694, Cl. 315-366.000.
Ohmann, William; and Wiessner, Edward E., to Whirlpool Corporation. Agitator mounted filter for an automatic washer. 4,338,802, Cl. 68-18.0FA.
Ohmori, Koichiro; Tashiro, Yasuo; and Nakayama, Heihachiro, to Honshu Paper Co., Ltd. Method for sealing a container. 4,338,765, Cl. 53-452.000.
Ohmura, Yasuhiro; Maruyama, Seiichiro; and Kawasaki, Hiroyuki, to Mitsubishi Chemical Industries, Ltd. Process for the production of a polyamide base resin composition. 4,339,555, Cl. 525-66.000.
Ohsawa, Mitsuo, to Sony Corporation. Electronic circuit arrangement mounted on printed circuit board. 4,339,785, Cl. 361-411.000.
Ohse, Helmut: *See—*
Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, 4,339,570, Cl. 528-272.000.
Oil Tool Molded Products, Inc.: *See—*
Schroder, Steven L., 4,339,107, Cl. 251-1.00B.
Ojanen, Randall W.: *See—*
Bower, Arnold B., Jr.; and Ojanen, Randall W., 4,339,006, Cl. 175-57.000.
Oji Paper Co., Ltd.: *See—*
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.
Oka, Tateki: *See—*
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, 4,338,880, Cl. 118-652.000.
Okada, Akira: *See—*
Shimizu, Toshimi; Fujishige, Shoei; and Okada, Akira, 4,339,360, Cl. 524-28.000.
Okai, Kazuki: *See—*
Masaki, Mitsuo; Yamanaka, Toru; Yoshioka, Mitsuko; and Okai, Kazuki, 4,339,379, Cl. 260-112.50R.
Okamoto, Eiichi: *See—*
Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, 4,339,802, Cl. 364-483.000.
Okamoto, Tadao; Obata, Eisuke; and Enomoto, Yutaka, to Fuji Latex Co., Ltd. Instrument for induction of labor. 4,338,943, Cl. 128-344.000.
Okamura, Kazuo; Daimon, Shigeo; and Tomihashi, Nobuyuki, to Daikin Kogyo Co., Ltd. Process of electrostatic printing with fluorinated polymer toner additive. 4,339,518, Cl. 430-126.000.
Okamura, Yoshio, to Shin-Etsu Chemical Co., Ltd. Heat curable organopolysiloxane compositions. 4,339,564, Cl. 528-15.000.
Okawa, Takashi: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,339,597, Cl. 560-205.000.
Okcuoglu, Selahattin A.: *See—*
Craft, James A.; and Okcuoglu, Selahattin A., 4,339,210, Cl. 400-208.000.
O'Keefe, David F.: *See—*
Holan, George; and O'Keefe, David F., 4,339,458, Cl. 424-282.000.
Okubo, Shigeo, to Design Professionals Financial Corp. Vibration controller utilizing magnetic forces. 4,339,780, Cl. 361-147.000.
Okuhira, Megumi: *See—*
Takemoto, Tsunematsu; Arichi, Shigeru; Arihara, Shigenobu; Nakajima, Tadashi; Okuhira, Megumi; and Uchida, Yoshihiro, 4,339,442, Cl. 424-182.000.
Olah, George A., to PCUK Produits Chimiques Ugine Kuhlmann. Superacid catalyzed preparation of resorcinol from meta-diisopropylbenzene. 4,339,613, Cl. 568-768.000.
Olah, George A., to PCUK Produits Chimiques Ugine Kuhlmann. Superacid catalyzed preparation of resorcinol from meta-isopropylphenol. 4,339,614, Cl. 568-768.000.
Oldemeyer, Wilhelm: *See—*
Greten, Berndt; Neubauer, Harry; Seeger, Gunter; Bucking, Gunter; Komp, Hans J.; and Oldemeyer, Wilhelm, 4,339,478, Cl. 427-212.000.
Olin Corporation: *See—*
Kircher, Morton S., 4,339,321, Cl. 204-237.000.
Oliva, Klaus: *See—*
Berth, Dieter; Hohlfeld, Gottfried; Oliva, Klaus; and Noack, Christian, 4,339,014, Cl. 180-54.00A.
Olkkola, E. Alfred. Grout removing tool. 4,338,718, Cl. 30-171.000.
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., to SKF Kugellagerfabriken GmbH. Linear motion rolling bearing. 4,339,157, Cl. 308-6.00C.
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, to SKF Kugellagerfabriken GmbH. Novel molding composition providing shaped articles of improved strength and heat and age resistance. 4,339,374, Cl. 524-606.000.
Olsson, Billy E.: *See—*
Keller, Joseph R.; and Olsson, Billy E., 4,339,768, Cl. 357-72.000.
Olympus Optical Co., Ltd.: *See—*
Ikuno, Yuji, 4,338,940, Cl. 128-303.140.
Matsuura, Tsuyoshi; Aihara, Mamoru; Takahashi, Yutaka; and Nakajima, Yoshio, 4,339,187, Cl. 354-173.000.
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.
Omark Industries, Inc.: *See—*
Doyle, Thomas E.; Hauser, Daniel; Hayes, Michael D.; and Martin, David C., 4,339,653, Cl. 219-99.000.
Omelian, Anatoli: *See—*
Choi, John I.; Kurtz, Bruce E.; and Omelian, Anatoli, 4,339,415, Cl. 423-126.000.
Omi, Kokichi: *See—*
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.
Oncor Corporation: *See—*
Clark, Wallace, 4,339,007, Cl. 175-107.000.
Ondetti, Miguel A.; and Cushman, David W., to E. R. Squibb & Sons, Inc. Compounds for alleviating angiotensin related hypertension. 4,339,600, Cl. 562-426.000.
Ono, Kenji; Nobutoki, Kazuhiro; and Sauer, Hans, to Matsushita Electric Works, Ltd.; and Sauer, Hans. Electromagnetic relay. 4,339,735, Cl. 335-119.000.
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, to Toa Nenryo Kogyo Kabushiki Kaisha. Solvent dewaxing waxy hydrocarbon oils using dewaxing aid. 4,339,619, Cl. 570-183.000.
Onose, Masayuki: *See—*
Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,339,315, Cl. 204-129.850.
Onoue, Keiji: *See—*
Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, 4,338,777, Cl. 57-263.000.
Oppenhuisen, Frederick H.: *See—*
Kirst, Robert J.; and Oppenhuisen, Frederick H., 4,338,954, Cl. 130-27.00G.
Oppenhuizen, Simon W.: *See—*
Blodee, Leif; Knapp, Robert L.; and Oppenhuizen, Simon W., 4,338,990, Cl. 160-229.00R.
Optical Information Systems, Inc.: *See—*
Kolodzey, James S., 4,339,822, Cl. 372-26.000.
Orain, Michel A., to Glaenzer Spicer. Slidable homokinetic tripod joint and a corresponding transmission having a floating shaft. 4,338,796, Cl. 464-111.000.

O'Rourke, Thomas W.: *See—*
Milburn, William W., Jr., 4,338,918, Cl. 126-430.000.
Ortega, Robert, to Purex Corporation. Butterfly valve. 4,339,110, Cl. 251-309.000.
Osaka, Susumu: *See—*
Toda, Minoru; and Osaka, Susumu, 4,339,682, Cl. 310-321.000.
Oshima, Ryoichiro: *See—*
Sakamoto, Takeshi; Anzai, Shunichi; Kobayashi, Nariyoshi; and Oshima, Ryoichiro, 4,338,780, Cl. 60-39.050.
Ostlund, Artur: *See—*
Berkestad, Karl-Erik; Danielsson, Lennart; Henriksson, Erik; Svensson, Torsten; and Ostlund, Artur, 4,339,249, Cl. 55-269.000.
Otis Engineering Corporation: *See—*
Paschal, James H., Jr., 4,339,001, Cl. 166-322.000.
Otsuka Kagaku Yakuhin Kabushiki Kaisha: *See—*
Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, 4,339,607, Cl. 568-426.000.
Ouano, Augustus C.: *See—*
Balanson, Richard D.; Clecak, Nicholas J.; Grant, Barbara D.; and Ouano, Augustus C., 4,339,522, Cl. 430-192.000.
Outtrim, John E.; and Stagner, Michael P. Armadillo toy. 4,338,742, Cl. 46-227.000.
Ovshinsky, Stanford R.; and Flasck, Richard A., to Energy Conversion Devices, Inc. Method and apparatus for making a modified amorphous glass material. 4,339,255, Cl. 65-32.000.
Owens-Corning Fiberglas Corporation: *See—*
Henry, Richard K., 4,339,402, Cl. 264-40.100.
Owens-Illinois, Inc.: *See—*
Curto, Nicholas J., 4,339,409, Cl. 264-509.000.
Heider, James E., 4,339,551, Cl. 521-138.000.
Johnson, William E.; and Ryan, William H., 4,339,260, Cl. 65-160.000.
Oyama, Kohei; and Nishizawa, Eiji, to Alps Electric Co. Ltd. Antenna equipment of UHF tuner. 4,339,756, Cl. 343-702.000.
Ozaki, Nobuo, to Maeda Industries, Ltd. Bicycle pedal. 4,338,829, Cl. 74-594.400.
Ozaki, Yoshio: *See—*
Tanaka, Yutaka; Yatomi, Takeshi; and Ozaki, Yoshio, 4,339,650, Cl. 219-69.00G.
Paccagnella, Danilo. Skiving machine for hides and similar materials. 4,338,803, Cl. 69-16.000.
Pako Corporation: *See—*
Gilligan, Patrick J.; and Merry, Ted G., 4,338,762, Cl. 53-244.000.
Palermiti, Frank M.: *See—*
Luebbe, Ray H., Jr.; Miro, Frank; and Palermiti, Frank M., 4,339,504, Cl. 428-513.000.
Palinczar, Victor; and Santini, Thomas F., to Carter-Wallace, Inc. Foam products. 4,339,550, Cl. 521-99.000.
Palitex Project Company GmbH: *See—*
Welters, Norbert, 4,338,774, Cl. 57-58.860.
Palladium Corporation: *See—*
Tracy, Thomas R., 4,339,019, Cl. 182-47.000.
Palmere, Raymond M.: *See—*
Plummer, Ernest L.; and Palmere, Raymond M., 4,339,457, Cl. 424-274.000.
Pankove, Jacques I., to RCA Corporation. Method for fabricating adjacent conducting and insulating regions in a film by laser irradiation. 4,339,285, Cl. 148-1.500.
Panveno, Mike, to Album Graphics, Inc. Disc jacket warp free insert. 4,339,034, Cl. 206-313.000.
Papantoniou, Christos: *See—*
Jacquet, Bernard; Mahieu, Claude; and Papantoniou, Christos, 4,339,561, Cl. 526-304.000.
Papasideris, Stamos I., to Caterpillar Tractor Co. Fire suppression system. 4,338,896, Cl. 123-198.00D.
Pape, Klaus: *See—*
Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.
Paper Converting Machine Company: *See—*
Niedermeyer, William P., 4,339,088, Cl. 242-1.000.
Papeschi, Giorgio: *See—*
Meiattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, 4,339,317, Cl. 204-195.00B.
Paradowski, Henri: *See—*
Caetani, Enzo; and Paradowski, Henri, 4,339,253, Cl. 62-40.000.
Park, John N.; and Steigerwald, Robert L., to General Electric Company. Proportional base drive circuit. 4,339,671, Cl. 307-253.000.
Parker, Robert G., to Scott Bader Company Limited. Highly filled crosslinkable emulsion polymer composition. 4,339,370, Cl. 524-424.000.
Pascau, Jean-Maurice, to Newco Synthetics International Inc. Hardening composition containing cellulose powder, latex, magnesite and magnesium chloride. 4,339,362, Cl. 524-5.000.
Paschal, James H., Jr., to Otis Engineering Corporation. Safety valve. 4,339,001, Cl. 166-322.000.
Paszner, Laszlo. Method of adhering mineral deposit in wood fragment surfaces. 4,339,405, Cl. 264-108.000.
Patchett, Arthur A.: *See—*
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.
Patel, Gordhanbhai N., to Allied Corporation. Color changing polyacetylenic compounds. 4,339,240, Cl. 23-230.00R.
Patel, Jayant M.: *See—*
Zwillich, Alexander; and Patel, Jayant M., 4,339,635, Cl. 200-48.00R.
Patrick, John P.; Kos, Joseph M.; and Harner, Kermit I., to United Technologies Corporation. Blade pitch angle control for a wind turbine generator. 4,339,666, Cl. 290-44.000.
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., to Texaco, Inc. Method for preparing ethyl benzene. 4,339,622, Cl. 585-433.000.
Paudice, Ciro; Sassanelli, Vitantonio; Di Nocco, Dino; Pracilio, Francesco; and Casa, Nicolo', to Societa' Italiana Vetro-Siv-S.p.A. Process and apparatus for bending and tempering glass sheets, especially thin sheets. 4,339,259, Cl. 65-104.000.
Payne, Carson R. Air cushion vehicle skirt material and method. 4,339,017, Cl. 180-127.000.
Payson, Albert E. Adjustable muffler for percussion instrument. 4,338,850, Cl. 84-411.00M.
Payton, Hugh W. Apparatus for arresting posterior nosebleeds. 4,338,941, Cl. 128-325.000.
Pcihoda, William W.: *See—*
Gursky, Michael T.; and Pcihoda, William W., 4,339,296, Cl. 156-345.000.
PCUK Produits Chimiques Ugine Kuhlmann: *See—*
Olah, George A., 4,339,613, Cl. 568-768.000.
Olah, George A., 4,339,614, Cl. 568-768.000.
Pease, William M., to Raytheon Company. Marine radar including anticollision unit. 4,339,751, Cl. 343-5.0DP.
Pedder, Simon J.: *See—*
Greener, Brian; and Pedder, Simon J., 4,339,158, Cl. 308-20.000.
Peddinghaus, Rolf: *See—*
Stursberg, Bernd; and Regenbrecht, Ludwig, 4,338,838, Cl. 83-467.00R.
Pegasus Sewing Machine Mfg. Co., Ltd.: *See—*
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, 4,338,873, Cl. 112-262.100.
Peil, Charles A.; and McLaren, John W., to Dow Chemical Company, The. Fork lift pallet construction. 4,339,040, Cl. 206-599.000.
Pellegrini, John P., Jr.; Beach, David L.; and Kobylinski, Thaddeus P., to Gulf Research & Development Company. Catalyst prepared from tungsten hexafluoride and water. 4,339,350, Cl. 252-429.00R.
Pelligrino, Paul A., to Twin Disc, Incorporated. System for shiftable multi-speed hydraulically operated power transmission and electronic controller therein. 4,338,832, Cl. 74-866.000.
Pennwalt Corporation: *See—*
Brooks, Wayne E.; Hodges, Jimmie R.; and Walker, Morris P., 4,339,312, Cl. 204-95.000.
Percarpio, Edward P., to Becton, Dickinson and Company. Closure inserting method. 4,338,764, Cl. 53-432.000.
Perez-Mendez, Victor; and Sommer, Frank G., to University of California, Regents of the. Method and apparatus for detecting and/or imaging clusters of small scattering centers in the body. 4,338,948, Cl. 128-660.000.
Perfect Fit Industries, Inc.: *See—*
Vitale, Joseph W., 4,338,693, Cl. 5-500.000.
Perry, Graham A., to International Computers Limited. Driver circuits for automatic digital testing apparatus. 4,339,673, Cl. 307-270.000.
Peters, Klaus-Jurgen; Bosch, Franz-Ulrich; Schindler, Herbert; and Nusser, Hermann, to Robert Bosch GmbH. Inductive displacement transducer. 4,338,815, Cl. 73-118.000.
Peterson, Richard W.; and Foster, Perry A., Jr., to Aluminum Company of America. Intermediate layer for seating RHM tubes in cathode blocks. 4,339,316, Cl. 204-243.00R.
Petro, John D.: *See—*
Turko, John D.; and Petro, John D., 4,338,962, Cl. 137-269.000.
Petrolite Corporation: *See—*
Martin, Richard L.; and Purdy, Evelyn W., 4,339,349, Cl. 252-389.00A.
Quinlan, Patrick M., 4,339,347, Cl. 252-344.000.
Petty, Elbert L.: *See—*
Petty, William T., 4,338,688, Cl. 4-191.000.
Petty, Lloyd F.: *See—*
Petty, William T., 4,338,688, Cl. 4-191.000.
Petty, Robert M.: *See—*
Petty, William T., 4,338,688, Cl. 4-191.000.
Petty, William T., to Petty, Elbert L.; Petty, Lloyd F.; and Petty, Robert M. Enclosure for tub drains. 4,338,688, Cl. 4-191.000.
Pfaff, Werner: *See—*
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,339,436, Cl. 424-115.000.
Pfizer Inc.: *See—*
Cross, Peter E.; and Dickinson, Roger P., 4,339,583, Cl. 546-256.000.
Pharos AB: *See—*
Wiklund, Rudolf; and Nordstrom, Lennart, 4,339,664, Cl. 250-577.000.
Philbag Co., Inc.: *See—*
Dunn, Philip, 4,339,061, Cl. 224-42.420.
Phillips Petroleum Company: *See—*
Burns, Lyle D., 4,339,245, Cl. 44-63.000.
Cheng, Paul J., 4,339,422, Cl. 423-456.000.
McDaniel, Max P., 4,339,559, Cl. 526-106.000.
Picker International Limited: *See—*
Bull, Eric W.; and Galloway, Robert D., 4,339,718, Cl. 324-319.000.
Young, Ian R., 4,339,716, Cl. 324-309.000.

Pickett, James M.: *See—*
Harder, Willard J.; and Pickett, James M., 4,338,921, Cl. 126-446.000.

Pierce, Percy E.: *See—*
Becher, David Z.; Christenson, Roger M.; Coalson, Richard L.; Pierce, Percy E.; and Schimmel, Karl F., 4,339,365, Cl. 523-400.000.

Pietro Laverda S.p.A.: *See—*
Raineri, Giuseppe, 4,338,955, Cl. 130-27.0AB.

Pioneer Electronic Corporation: *See—*
Nishioka, Akira, 4,339,631, Cl. 179-1.0GS.

Pitney Bowes Inc.: *See—*
Beck, Christian A.; and Macaluso, Paul J., 4,339,196, Cl. 355-3.0DD.
Chang, Mike S. H., 4,339,519, Cl. 430-135.000.
Gabelman, George N., 4,339,195, Cl. 355-3.0CH.
Scribner, Albert W., 4,339,194, Cl. 355-3.0FU.

Pitt, Gillies D.; and Williamson, Roger J., to ITT Industries, Inc. Fibre optic transducer. 4,339,661, Cl. 250-227.000.

Pittinger, Charles B., Jr.: *See—*
Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr., 4,338,720, Cl. 30-276.000.

Pittinger, Charles B., Sr.; and Pittinger, Charles B., Jr. Housing and frame system for vegetation filament trimmer. 4,338,720, Cl. 30-276.000.

Pitts, Frank; Tiethof, Jack A.; and Burns, Robert A., to Engelhard Minerals & Chemicals Corporation. Sorptive clay composition and method of manufacture. 4,339,352, Cl. 252-449.000.

Pittsburgh-Des Moines Corporation: *See—*
Hills, Richard E.; and Tague, Thomas J., 4,339,052, Cl. 220-226.000.

Pittway Corporation: *See—*
Grant, John T., 4,339,640, Cl. 200-61.45R.

Placzek, Johann. Apparatus for use in the production of concrete. 4,339,204, Cl. 366-18.000.

Plantema, Otto G.: *See—*
van Geem, Paul C.; de Graaf, Theodorus F. M.; Knol, Dirk; and Plantema, Otto G., 4,339,604, Cl. 568-357.000.

Plummer, Ernest L.; and Palmere, Raymond M., to FMC Corporation. 3-(Pyrrol-1-yl)phenylmethyl esters and intermediates. 4,339,457, Cl. 424-274.000.

Plummer, Marvin E. Archery bow construction. 4,338,909, Cl. 124-16.000.

Pogoda, Gary S. Remote control for electronic musical instrument equipment. 4,338,846, Cl. 84-1.240.

Pohl, Gerhard: *See—*
Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, 4,339,578, Cl. 544-207.000.

Pokhodnya, Igor K.: *See—*
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.

Polaroid Corporation: *See—*
Bagdis, Judy, 4,339,184, Cl. 354-23.00D.
Biber, Conrad H., 4,339,514, Cl. 430-7.000.
Corben, Leo D.; and Falxa, Martin L., 4,339,532, Cl. 430-567.000.

Pollak, Robert J., to Allis-Chalmers Corporation. Crusher head supporting unit for a gyratory crusher. 4,339,087, Cl. 241-211.000.

Polyakov, Jury P.: *See—*
Guselnikov, Leonid E.; Polyakov, Jury P.; Volnina, Elvira A.; and Nametkin, Nikolai S., 4,339,562, Cl. 528-14.000.

Pomagalski S.A.: *See—*
Tauzin, Francis, 4,338,863, Cl. 104-89.000.

Pomfret, Colin T.; and Freyn, Fritz, to List, Hans. Decompression device. 4,338,893, Cl. 123-90.160.

Pommer, Ernst-Heinrich: *See—*
Dockner, Toni; Frank, Anton; and Pommer, Ernst-Heinrich, 4,339,448, Cl. 424-245.000.

Pomper, Michael: *See—*
Mueller, Ruediger; Pomper, Michael; and Leipold, Ludwig, 4,339,668, Cl. 307-149.000.

Ponzoni, Ronald W.: *See—*
Albaum, Joseph D.; Ponzoni, Ronald W.; and Johnson, Eric C., 4,339,451, Cl. 426-250.000.

Porter, Allan W. H., to Adolph Saurer Ltd. Thread brake for a textile machine. 4,338,975, Cl. 139-450.000.

Posso, Patrick P., to GEFITEC S.A. Maneuvering and release device for camera. 4,339,191, Cl. 354-269.000.

Post Office, The: *See—*
Faktor, Marc M.; and Haigh, John, 4,339,302, Cl. 156-605.000.

Poteet, Wendell A., to O'Grady Containers, Inc. Unitary knockdown file box. 4,339,069, Cl. 229-36.000.

Potomac Applied Mechanics, Inc.: *See—*
Spevak, Stephen T., 4,339,164, Cl. 312-283.000.

Potter, Ralph M., to General Electric Company. Metal vapor lamp having internal coating for extending condensate film. 4,339,686, Cl. 313-221.000.

Pound, William C.: *See—*
Valbona, Bruno M.; and Pound, William C., 4,339,639, Cl. 200-52.00R.

Povarov, Leonid A.: *See—*
Volkov, Mstislav V.; Oganesian, Oganes V.; and Povarov, Leonid A., 4,338,927, Cl. 128-92.00A.

Powderly, John, to USM Corporation. Method of loading hollow rivets on a mandrel. 4,338,714, Cl. 29-433.000.

Powers Manufacturing Co.: *See—*
Meacle, Thomas, 4,339,028, Cl. 198-427.000.

Powers, Robert: *See—*
Guscott, John K.; and Powers, Robert, 4,339,748, Cl. 340-555.000.

Pozzo, Hans; and Dammig, Joachim, to Schubert & Salzer. Control mechanism for a fiber feed device on an open end spinning mechanism. 4,338,773, Cl. 57-81.000.

PPG Industries, Inc.: *See—*
Becher, David Z.; Christenson, Roger M.; Coalson, Richard L.; Pierce, Percy E.; and Schimmel, Karl F., 4,339,365, Cl. 523-400.000.
Dilmore, Colonel R.; Raetzsch, Carl W., Jr.; Jeffery, Thomas C.; and Dupre, Dallas D., III, 4,339,323, Cl. 204-256.000.
Hoekje, Howard H., 4,339,314, Cl. 204-98.000.
Rechlicz, Thomas A., 4,339,313, Cl. 204-98.000.
Rukavina, Thomas G.; and Lewis, Harold F., 4,339,503, Cl. 428-412.000.

Pracilio, Francesco: *See—*
Paudice, Ciro; Sassanelli, Vitantonio; Di Nocco, Dino; Pracilio, Francesco; and Casa, Nicolo', 4,339,259, Cl. 65-104.000.

Predina, Joseph P.; and Jasper, Steven C., to Motorola, Inc. Phase corrected clock signal recovery circuit. 4,339,823, Cl. 375-20.000.

Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for selective formation of C_4 compounds and tertiary organo group VA compound-containing catalyst system used therein. 4,339,608, Cl. 568-487.000.

Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for selective formation of C_4 compounds and biphosphine disulfide-containing catalyst system used therein. 4,339,609, Cl. 568-487.000.

Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for selective formation of C_4 compounds and thiol-containing catalyst system used therein. 4,339,610, Cl. 568-487.000.

Pretzer, Wayne R.; Kobylinski, Thaddeus P.; and Bozik, John E., to Gulf Research & Development Company. Process for selective formation of C_4 compounds and organic sulfide-containing catalyst system used therein. 4,339,611, Cl. 568-487.000.

Pritchard, Eric K. Switching frequency stabilization and load fault detection in switching amplifiers. 4,339,701, Cl. 318-696.000.

Procter & Gamble Company, The: *See—*
Whyte, David D., 4,339,356, Cl. 252-522.00A.

Pruett, David J.; and Howerton, William B., to United States of America, Energy. Method for removing fluoride contamination from nitric acid. 4,339,309, Cl. 203-29.000.

Psaila, Alexander; and Kessler, Katerina, to Ciba-Geigy AG. Process for producing photographic images. 4,339,523, Cl. 430-239.000.

Puccio, Guy S.; and Kogutek, Robert J., to Acme Highway Products Corporation. Composite expansion joint. 4,339,214, Cl. 404-69.000.

Pui, David Y. H.: *See—*
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., 4,338,784, Cl. 60-274.000.

Pulda, William F., to Vanguard Machinery Corp. Stacking of materials. 4,339,220, Cl. 414-84.000.

Pullman Incorporated: *See—*
Knippel, Willis H., 4,339,222, Cl. 414-387.000.

Purdy, Evelyn W.: *See—*
Martin, Richard L.; and Purdy, Evelyn W., 4,339,349, Cl. 252-389.00A.

Purex Corporation: *See—*
Ortega, Robert, 4,339,110, Cl. 251-309.000.

Pyke, Thomas R.: *See—*
Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., 4,339,539, Cl. 435-253.000.

Queen's University at Kingston: *See—*
Nakatsu, Kanji, 4,339,759, Cl. 346-33.00R.

Quemere, Daniel: *See—*
Herledan, Jean-Rene; Le Dieu, Bernard; Martin, Jean-Pierre; and Quemere, Daniel, 4,339,815, Cl. 370-58.000.

Quinlan, Patrick M., to Petrolite Corporation. Use of quaternized derivatives of polymerized pyridines and quinolines as demulsifiers. 4,339,347, Cl. 252-344.000.

R. W. Fernstrum & Co.: *See—*
Fernstrum, Paul W., 4,338,993, Cl. 165-44.000.

Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., to Blendax-Werke R. Schneider GmbH & Co. Toothpaste active against plaque comprising a copper compound and a plastic polishing agent. 4,339,429, Cl. 424-49.000.

Racciato, Joseph S., to Merck & Co., Inc. Use of heteropolysaccharide S-119 as an antimigrant. 4,339,239, Cl. 8-561.000.

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D'Agostino, Vincent F.; and Lee, Joseph Y., 4,339,473, Cl. 427-44.000.

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Ramot University Authority for Applied Research & Industrial Development: *See—*
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Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, 4,339,592, Cl. 560-25.000.

Ratka, Frances I.: *See—*
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,339,394, Cl. 260-465.300.

Ratterman, Ernest, to General Electric Company. Method for applying organopolysiloxane fluids to grinding wheels containing cubic boron nitride abrasives. 4,338,750, Cl. 51-281.00R.

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Imber, Marion, 4,338,867, Cl. 108-159.000.

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Connolly, Walter L.; and Ray, Harold T., 4,339,112, Cl. 251-367.000.

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Krackeler, Joseph J.; and Weir, Fred E., 4,338,970, Cl. 138-141.000.
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Chio, Shiu-Shin, 4,339,281, Cl. 134-1.000.
Dennison, Robert C.; and Walter, James M., 4,339,770, Cl. 358-19.000.
Goldman, Abraham, 4,339,528, Cl. 430-323.000.
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Mawhinney, Daniel D., 4,339,753, Cl. 343-6.5SS.
McDonie, Arthur F.; and Miller, William K., 4,339,469, Cl. 427-10.000.
Miller, Edward A., 4,339,645, Cl. 219-10.49R.
Pankove, Jacques I., 4,339,285, Cl. 148-1.500.
Shearer, James D., 4,339,784, Cl. 361-403.000.
Stewart, Roger G., 4,339,809, Cl. 365-206.000.
Toda, Minoru; and Osaka, Susumu, 4,339,682, Cl. 310-321.000.
Torres, Rafael; and Henderson, John G. N., 4,339,827, Cl. 455-188.000.

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Regan, Robert J.; Cogan, Adrian; and Buhrer, Carl F., to GTE Laboratories Incorporated. Energy saving fluorescent lighting system. 4,339,690, Cl. 315-97.000.

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Remote Dynamics: *See—*
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Rendell, Stanley E., to Sterlingworth Music, Inc. Musical instrument string modifying device. 4,338,772, Cl. 57-9.000.

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Renishaw Electrical Limited: *See—*
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Reven, Frederick V., to Nalco Chemical Company. Plastic ramming mix based on MGO. 4,339,542, Cl. 501-109.000.

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Theissen, Robert J., 4,339,268, Cl. 71-108.000.

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Rich, Rolland W. T-Joint structure for trampolines and the like. 4,339,123, Cl. 272-65.000.

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Burton, James O.; Dannels, Christopher J.; and Ahlin, Frank J., 4,339,118, Cl. 270-31.000.

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Richter, Reinhard H.; Tucker, Benjamin W.; and Ulrich, Henri, to Upjohn Company, The. 1,3-Alkylene-diazetidine-2,4-diones. 4,339,381, Cl. 260-239.30B.

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Ricoh Company, Ltd.: *See—*
Araki, Shigeyuki; and Yamanaka, Hideyasu, 4,339,702, Cl. 318-696.000.

Ricono, Marion P.; and Bridges, Harold D., to Armco Inc. Method of producing improved serrated flats used in the manufacturing of grating. 4,338,807, Cl. 72-187.000.

Riddle, Stanley T.: *See—*
Larson, David D.; and Riddle, Stanley T., 4,339,657, Cl. 235-92.0QC.

Rieter Machine Works Limited: *See—*
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Riggs, Eric D. Head restraint. 4,339,151, Cl. 297-464.000.

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Riso Kagaku Corporation: *See—*
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Ritchey, Thomas W.; Weaver, John M.; and Sapone, Martin, to Lever Brothers Company. Oral mouthwash containing zinc and glycine. 4,339,432, Cl. 424-54.000.

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Robbart, Edward. Treatment of cellulose. 4,339,479, Cl. 427-255.100.

Robert Bosch GmbH: *See—*
Dilger, Peter; Honig, Gunter; and Kauff, Helmut, 4,338,900, Cl. 123-440.000.
Friese, Karl-Hermann; and Esper, Friedrich, 4,339,320, Cl. 204-195.00S.
Harsch, Klaus; and Schulzke, Peter, 4,339,781, Cl. 361-154.000.
Kopse, Odon, 4,339,080, Cl. 239-533.300.
Peters, Klaus-Jurgen; Bosch, Franz-Ulrich; Schindler, Herbert; and Nusser, Hermann, 4,338,815, Cl. 73-118.000.

Romann, Peter, 4,338,814, Cl. 73-118.000.
Roberts, Harry H.; and Cote, Raymond A., to Champion International Corporation. Composite packaging system including an outer parallelogram container adapted to hold a plurality of wedge shaped inner cartons. 4,339,041, Cl. 206-611.000.
Robinson, John W.: *See*—
Kaganowicz, Grzegorz; and Robinson, John W., 4,339,471, Cl. 427-40.000.
Robinson, Peter M.; Rakowitz, David H.; and Nowakowski, Lesley J., to American Cyanamid Company. High concentration water-soluble polymers in water-in-oil emulsions. 4,339,371, Cl. 524-310.000.
Robinson, Peter M., to American Cyanamid Company. Granulation and drying aids for polymeric gels. 4,339,373, Cl. 524-521.000.
Rock, Erich, to Julius Blum Gesellschaft m.b.H. Furniture hinge. 4,338,699, Cl. 16-237.000.
Rockwell International Corporation: *See*—
Adams, Tello D., 4,339,731, Cl. 331-1.00A.
Furst, Raymond B., 4,339,227, Cl. 415-213.00C.
Jones, Addison B., 4,339,305, Cl. 156-650.000.
Macheel, Gary W., 4,339,134, Cl. 273-138.00A.
Mitchell, Daniel M., 4,339,791, Cl. 363-41.000.
Rodaway, Keith S. Subtractive and additive differential gear reduction system. 4,338,830, Cl. 74-764.000.
Rodaway, Keith S. Subtractive and additive differential gear reduction system. 4,338,831, Cl. 74-805.000.
Rogier, Edgar R., to Henkel Corporation. Polyglycidyl ethers. 4,339,389, Cl. 549-555.000.
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Rolff, William J.; Costa, Samuel; and Hendricks, William A., to Singer Company, The. Two step phase reset gyro motor power supply. 4,339,703, Cl. 318-702.000.
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Romann, Peter, to Robert Bosch GmbH. Device for measuring the mass of a flowing medium. 4,338,814, Cl. 73-118.000.
Ronai, Andras: *See*—
Bajusz, Sandor; Ronai, Andras; and Szekely, Jozsef, 4,339,440, Cl. 424-177.000.
Roquette Freres: *See*—
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Rosenberg, Roger L.: *See*—
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Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, to Bayer Aktiengesellschaft. Water-dispersible, radiation-crosslinkable binding agents from urethane acrylates, a process for their production, and the use thereof in aqueous dispersions in color painting, color printing, and textile applications. 4,339,566, Cl. 528-68.000.
Rosner, Manfred, to Ciba-Geigy AG. Process for the production of substituted nitroaryl compounds. 4,339,618, Cl. 568-937.000.
Rossman, Axel, to Motoren-und Turbinen-Union Munchen GmbH. Rotor wheel for axial-flow turbomachinery. 4,339,229, Cl. 416-218.000.
Roth, Kurt H.: *See*—
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Rubner, Roland: *See*—
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Ruhlman, Harold W., to Borg-Warner Corporation. Transmission shift control guide and detent apparatus. 4,338,828, Cl. 74-475.000.
Rukavina, Thomas G.; and Lewis, Harold F., to PPG Industries, Inc. Protection of polycarbonate from ultraviolet radiation. 4,339,503, Cl. 428-412.000.
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Rutzen, Horst; and Rupilius, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien; and Deutsche Gold-und Silberscheide Anstalt Vormals Roessler. Process for the manufacture of 1,2-diols having at least 4 carbon atoms. 4,339,616, Cl. 568-867.000.
Ryan, James P.: *See*—
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Sagami, Hiroshi: *See*—
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Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, to Koito Manufacturing Company, Ltd. Sealed beam lamp assembly. 4,339,685, Cl. 313-113.000.
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Sakabe, Yukio; Hamaji, Yukio; and Komatsu, Hiroshi, to Murata Manufacturing Co., Ltd. Ceramic dielectric composition. 4,339,544, Cl. 501-136.000.
Sakakibara, Naoji, to Aisin Seiki Kabushiki Kaisha. Control system for automobile air conditioners. 4,339,076, Cl. 236-84.000.
Sakakibara, Yoshiaki: *See*—
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Sakamoto, Takeshi; Anzai, Shunichi; Kobayashi, Nariyoshi; and Oshima, Ryoichiro, to Hitachi, Ltd. Method of cooling a gas turbine blade and apparatus therefor. 4,338,780, Cl. 60-39.050.
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Samour, Carlos M.; and Vida, Julius A., to Colgate-Palmolive Company. Alkoxymethyl and benzyloxymethyl phenobarbital therapeutic compositions. 4,339,454, Cl. 424-254.000.
Sanders, Forest E. Knockdown spiral stairway. 4,338,751, Cl. 52-187.000.
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Sasaki, Hiroshi; and Ariga, Yoshio, to Tokyo Shibaura Denki Kabushiki Kaisha. Paper sheets separating apparatus. 4,339,119, Cl. 271-180.000.
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Sauter, Fritz; Eberle, Otto; Suss, Beate; and Weissgerber, Rudolf, to Consortium fur Elektrochemische Industrie GmbH. 1-(3-Pyridyl)-2,2,2-trihaloethyl compounds and fungicidal compositions containing the same. 4,339,455, Cl. 424-263.000.
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Schaeffer, Georg: *See*—
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Schmidt, Reinhold: *See*—
Beitecke, Bernd; and Schmidt, Reinhold, 4,338,801, Cl. 68-13.00R.
Schmidt, Robert J.: *See*—
Imai, Tamotsu; and Schmidt, Robert J., 4,339,617, Cl. 568-899.000.
Schmitt, Frederick L.: *See*—
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,339,344, Cl. 252-187.240.
Schneider, Rainer: *See*—
Wehner, Wolfgang; Michaelis, Klaus-Peter; and Schneider, Rainer, 4,339,383, Cl. 548-419.000.
Schoepe, Adolf. Side inlet ballcock having flow and structural improvements. 4,338,964, Cl. 137-436.000.
Schoolar, Richard B., to United States of America, Navy. PbS_xSe_{1-x} semiconductor. 4,339,764, Cl. 357-30.000.
Schouteeten, Alain; and Christidis, Yani, to Societe Francaise Hoechst. Process of preparation of racemic hydroxyarylglycolic acids and novel products resulting therefrom. 4,339,602, Cl. 562-466.000.
Schranz, Karl-Wilhelm; and Sobel, Johannes, to AGFA-Gevaert Aktiengesellschaft. Method of stabilizing color photographic materials and a color photographic material. 4,339,515, Cl. 430-17.000.
Schroder, Steven L., to Oil Tool Molded Products, Inc. Well blowout preventer packer assembly and packer modules therefor. 4,339,107, Cl. 251-1.00B.
Schubert, Gunter: *See*—
Enneking, Heinrich; Schubert, Gunter; Hauger, Ludwig; and Mladek, Rolf, 4,339,091, Cl. 242-47.000.
Schubert & Salzer: *See*—
Pozzo, Hans; and Dammig, Joachim, 4,338,773, Cl. 57-81.000.
Schuette, William L.: *See*—
Gladrow, Elroy M.; Winter, William E.; and Schuette, William L., 4,339,354, Cl. 252-455.00Z.
Schuh, Frank J., to Atlantic Richfield Company. Curved well conductors for offshore platform. 4,339,005, Cl. 175-9.000.
Schult, Hans E. Solid sulfur-extended asphalt composition and method and apparatus therefor. 4,339,277, Cl. 106-275.000.
Schultess, Adrian; and Farine, Jean-Claude, to Laboratoires OM Societe Anonyme. Synthetic magnesium aluminosilicate, process for the manufacture thereof, and pharmaceutical compositions containing same. 4,339,421, Cl. 423-330.000.
Schulz, Johann G. D.; and Cobler, John A., to Gulf Research & Development Company. Bituminous emulsions. 4,339,346, Cl. 252-311.500.
Schulzke, Peter: *See*—
Harsch, Klaus; and Schulzke, Peter, 4,339,781, Cl. 361-154.000.
Schundehutte, Karl H.: *See*—
Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schundehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.
Schutz, Wilhelm. Process and apparatus for reclaiming polyurethanes. 4,339,358, Cl. 521-49.500.
Schwartz, Richard B., to Apex Foot Products Corp. Universal orthotic. 4,338,734, Cl. 36-44.000.
Schwarzkopf, Anton, to Anton Schwarzkopf Fahrzeug- und Stahlbau, Firma. Orbital amusement-park ride. 4,339,121, Cl. 272-38.000.
Schwebel, Paul R.; and Friend, Manuel N. Device for filling medicament injectors. 4,338,980, Cl. 141-18.000.
Schweitzer, Earl O. Readily separable jar mounting device. 4,339,102, Cl. 248-221.100.
Schwenker, Robert O.: *See*—
Horng, Cheng T.; Konian, Richard R.; Schwenker, Robert O.; and Wieder, Armin W., 4,339,767, Cl. 357-44.000.
Scott Bader Company Limited: *See*—
Parker, Robert G., 4,339,370, Cl. 524-424.000.
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., to United States of America, Navy. Electrical connection. 4,339,683, Cl. 310-364.000.
Scribner, Albert W., to Pitney Bowes Inc. Cold pressure fusing apparatus. 4,339,194, Cl. 355-3.0FU.
Sears, Stephan B.: *See*—
Kyser, Edmond L.; and Sears, Stephan B., 4,339,763, Cl. 346-140.00R.
Seavitt, Susan A. Washable diaper. 4,338,938, Cl. 128-284.000.
Seeger, Gunter: *See*—
Greten, Berndt; Neubauer, Harry; Seeger, Gunter; Bucking, Gunter; Komp, Hans J.; and Oldemeyer, Wilhelm, 4,339,478, Cl. 427-212.000.
Seibel, Markus; Huber, Bernd; Bindrum, Irmgard; and Bodenheimer, Dieter, to Hoechst Aktiengesellschaft. Light-sensitive vesicular material. 4,339,520, Cl. 430-155.000.
Seiki, Kazuo: *See*—
Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, 4,338,777, Cl. 57-263.000.
Senda, Shuichi: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaoki, 4,339,794, Cl. 364-200.000.
Seng, Robert A.: *See*—
Beer, Carl C.; and Seng, Robert A., 4,338,698, Cl. 15-230.160.
Seymour, Raymond K.; Murphy, Frank H.; and Vergnano, Lelio C., to General Electric Company. Current switching member for circuit breakers. 4,339,642, Cl. 200-153.00G.
Shamaev, Pavel P.: *See*—
Grigoriev, Anatoly P.; Lifshits, Sara K.; and Shamaev, Pavel P., 4,339,304, Cl. 156-635.000.
Shames, Harold: *See*—
Shames, Sidney J.; and Shames, Harold, 4,338,731, Cl. 34-82.000.
Shames, Sidney J.; and Shames, Harold, to Melard Manufacturing Corporation. Vent for a clothes dryer. 4,338,731, Cl. 34-82.000.
Shankar, Srinivasan: *See*—
Dardi, Louis E.; and Shankar, Srinivasan, 4,339,509, Cl. 428-632.000.
Shanklin Corporation: *See*—
Shanklin, Frank G.; and King, Francis X., 4,339,093, Cl. 242-58.600.
Shanklin, Frank G.; and King, Francis X., to Shanklin Corporation. Pneumatic roll lifter. 4,339,093, Cl. 242-58.600.
Shape, Inc.: *See*—
Gelardi, Anthony L.; Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,339,162, Cl. 312-10.000.
Sharp Kabushiki Kaisha: *See*—
Doi, Keiichiro; Makita, Minoru; and Kowada, Masaaki, 4,339,646, Cl. 219-10.55B.
Kinashi, Hiroshi; Miwa, Yoshihisa; Kato, Shoshichi; and Kawataki, Hiroyuki, 4,339,783, Cl. 361-235.000.
Matsumoto, Masafumi; and Kotani, Matahira, 4,339,761, Cl. 346-75.000.
Shaw, Peter V.; and Speed, Stewart, to British Petroleum Company Limited, The. Inert gas supply and salvage system for oil tankers. 4,338,874, Cl. 114-50.000.
Shearer, James D., to RCA Corporation. Solder draw pad. 4,339,784, Cl. 361-403.000.
Shelby, Robert L.; and Wilkins, Douglas A., to Caterpillar Tractor Co. Hood, muffler and air cleaner module for an internal combustion engine. 4,338,890, Cl. 123-195.00A.
Shelley, William. Radiant heating and cooling panel and method of manufacturing. 4,338,995, Cl. 165-49.000.
Sheneman, Gary L.: *See*—
Welton, Myron L.; and Sheneman, Gary L., 4,338,704, Cl. 17-50.000.
Shergold, Howard L.: *See*—
Windle, William; Lofthouse, Charles H.; and Shergold, Howard L., 4,339,042, Cl. 209-5.000.
Sherman Industries, Inc.: *See*—
Beer, Carl C.; and Seng, Robert A., 4,338,698, Cl. 15-230.160.
Sherrill, John B. Pivotal support with positive stop warp stop-motion. 4,338,972, Cl. 139-369.000.
Shibagaki, Masahiro: *See*—
Sato, Osamu; and Shibagaki, Masahiro, 4,339,079, Cl. 239-43.000.
Shibano, Tomishi; Maruchi, Sachio; Yakan, Koji; Kobayashi, Tadashi; and Akimoto, Saburo, to Sanyo-Kokusaku Pulp Co., Ltd. Pressure sensitive adhesive products. 4,339,485, Cl. 428-40.000.
Shibata, Fumio: *See*—
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, 4,339,330, Cl. 208-251.00R.

Shimamoto, Noboru; and Yumoto, Satoshi, to Shin-Etsu Chemical Co., Ltd. Method for temporarily protecting sticky surface and a thus protected adhesive sheet material. 4,339,486, Cl. 428-40.000.

Shimazaki, Yuzo: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,339,340, Cl. 252-79.500.

Shimizu, Toshimi; Fujishige, Shoei; and Okada, Akira, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Particles of activated oxidized polysaccharide substance coated with inactive protective layer and method for manufacture thereof. 4,339,360, Cl. 524-28.000.

Shimp, David A.: *See—*
Hicks, Darrell D.; and Shimp, David A., 4,339,369, Cl. 523-414.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Ishihara, Toshinobu; Taguchi, Kenichi; and Yamamoto, Akira, 4,339,397, Cl. 260-665.00R.
Okamura, Yoshio, 4,339,564, Cl. 528-15.000.
Shimamoto, Noboru; and Yumoto, Satoshi, 4,339,486, Cl. 428-40.000.
Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,339,463, Cl. 424-35.000.
Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, 4,339,563, Cl. 528-14.000.

Shinohara, Daizo: *See—*
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.

Shionogi & Co., Ltd.: *See—*
Ko'Oka, Yoshinobu; Munekage, Mariko; and Minato, Hitoshi, 4,339,575, Cl. 544-20.000.
Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, 4,339,463, Cl. 424-35.000.

Shirakawa, Toshifumi: *See—*
Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, 4,339,607, Cl. 568-426.000.

Shirasu, Hiroshi: *See—*
Utagawa, Ken; and Shirasu, Hiroshi, 4,339,665, Cl. 250-578.000.

Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, to Canon Kabushiki Kaisha. Liquid jet recording method. 4,339,762, Cl. 346-140.00R.

Shmuter, Shimshon: *See—*
Gelfer, Vadim; Kaganovsky, Yaakov; Muchnik, Shimon; and Shmuter, Shimshon, 4,338,923, Cl. 128-24.00R.

Shockley, David L.: *See—*
Hedges, Richard A.; Shockley, David L.; Fralick, Stanley C.; and Kane, Paul H., 4,339,798, Cl. 364-412.000.

Shukla, Jayendra G.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,339,357, Cl. 252-606.000.

Shuman, Ralph J.: *See—*
Bhatia, Sushil; and Shuman, Ralph J., 4,339,758, Cl. 346-1.100.

Shumate, Eldridge J., to Allis-Chalmers Corporation. Filter bag tensioning arrangement. 4,339,251, Cl. 55-378.000.

SI Handling Systems, Inc.: *See—*
Ziegenfus, Barry L., 4,338,864, Cl. 104-121.000.

Sicard, Philippe: *See—*
Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, 4,339,387, Cl. 549-488.000.

Siegle, Peter: *See—*
Kranz, Eckart; and Siegle, Peter, 4,339,612, Cl. 568-649.000.

Siemens Aktiengesellschaft: *See—*
Ahne, Hellmut; Kuhn, Eberhard; and Rubner, Roland, 4,339,521, Cl. 430-192.000.
Bogner, Gunther; and Kullmann, Dieter, 4,339,681, Cl. 310-201.000.
Fromm, Ingrid; and Unterberger, Hans, 4,339,658, Cl. 250-227.000.
Kraus, Hubert, 4,339,651, Cl. 219-85.0CM.
Mueller, Ruediger; Pomper, Michael; and Leipold, Ludwig, 4,339,668, Cl. 307-149.000.
Winzer, Gerhard, 4,339,170, Cl. 350-96.160.
Winzer, Gerhard; Reichelt, Achim; and Michel, Herbert, 4,339,290, Cl. 156-159.000.

Siggen, Guy; and Berney, Michel, to Baumgartner Papiers S.A. Plasticizer installation for the treatment of a rope of fibres. 4,338,882, Cl. 118-674.000.

Siglock, John V., to Unicorn Electrical Products. High pressure sodium lamp ballast circuit. 4,339,695, Cl. 315-276.000.

Sigma Plastique: *See—*
Tauzin, Francis, 4,338,863, Cl. 104-89.000.

Signetics Corporation: *See—*
Hoeft, Werner H., 4,339,677, Cl. 307-564.000.

Sigworth, Harrison W., Jr. Combined solar heating and passive cooling apparatus. 4,338,991, Cl. 165-2.000.

Sillou, Daniel: *See—*
Kuroda, Kei-ichi; Sillou, Daniel; and Takeutchi, Fujio, 4,339,684, Cl. 313-105.00R.

Simms, Robert A. Method of making polarized ophthalmic glass. 4,339,256, Cl. 65-32.000.

Simonenko, Jury A.: *See—*
Kasatkin, Boris S.; Pokhodnya, Igor K.; Musiachenko, Valentin F.; Golovko, Vladimir N.; Kolomiets, Ljudmila N.; Simonenko, Jury A.; and Gulyar, Anatoly V., 4,339,286, Cl. 148-24.000.

Simons, Leon. Recessed head fastener and driver therefor. 4,338,835, Cl. 81-436.000.

Sinatra, Gerald: *See—*
McNamara, Daniel E.; and Sinatra, Gerald, 4,339,150, Cl. 297-284.000.

Singer Company, The: *See—*
Rolff, William J.; Costa, Samuel; and Hendricks, William A., 4,339,703, Cl. 318-702.000.

Sir James Farmer Norton & Company Limited: *See—*
Norton, David E. P., 4,338,876, Cl. 118-259.000.

Sirotinsky, Alexandr A.: *See—*
Makeev, Anatoly E.; and Sirotinsky, Alexandr A., 4,338,879, Cl. 118-602.000.

SITMA - Societa Italiana Macchine Antomatiche S.p.A.: *See—*
Ballestrazzi, Aris; and Tassi, Lamberto, 4,338,768, Cl. 53-495.000.

Sjoberg, Peter, to Alfa-Laval AB. Filtration device. 4,339,333, Cl. 210-411.000.

Sjostrom, Lars B.: *See—*
Nissmo, Jim A.; Sundin, Jan A.; and Sjostrom, Lars B., 4,339,074, Cl. 236-47.000.

Skala, Stephen F. Exhaust gas treatment by a reactant. 4,338,785, Cl. 60-311.000.

SKF Kugellagerfabriken GmbH: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,339,157, Cl. 308-6.00C.
Olschewski, Armin; Brandenstein, Manfred; and Kunkel, Heinrich, 4,339,374, Cl. 524-606.000.

SKF (U.K.) Limited: *See—*
Greener, Brian; and Pedder, Simon J., 4,339,158, Cl. 308-20.000.

Sluys, Wesley W., to Builders Concrete, Inc. Embedded marine pile hoop. 4,339,215, Cl. 405-219.000.

Smilges, Robert; and Wigmore, Richard, to Abex Corporation. Dual pilot counterbalance valve. 4,338,856, Cl. 91-420.000.

Smith, Donald P. Cooking apparatus. 4,338,911, Cl. 126-21.00A.

Smith, Frederick M.; and O'Dair, James R., to Georgia-Pacific Corporation. Tree and brushwood harvester. 4,338,985, Cl. 144-34.00R.

Smith, Harry L. O., to Beattie Systems, Inc. Bright screen optical viewer apparatus and method. 4,339,188, Cl. 354-219.000.

Smith, James L., to United States of America, Army. Log-log scale refractor. 4,339,178, Cl. 350-432.000.

Smith, John W.: *See—*
Ford, Charles; Gill, Arthur, Jr.; Smith, John W.; and Freeman, Louis L., Jr, 4,339,078, Cl. 239-1.000.

Smith, Kenneth I., to Times Fiber Communications, Inc. Radiating cable. 4,339,733, Cl. 333-237.000.

Smith, Lloyd K.; and Ryan, James P. Apparatus for detachably connecting a removable frame to a vehicle frame. 4,339,148, Cl. 296-35.300.

Smith, Marc L.: *See—*
Tsou, Ivan H.; and Smith, Marc L., 4,339,368, Cl. 523-414.000.

Smith, Ray E.: *See—*
Nicholson, Richard R.; Smith, Ray E.; and Shukla, Jayendra G., 4,339,357, Cl. 252-606.000.

Smith, Robert H., to Chrysler Corporation. Direct solenoid operated directional control valve. 4,338,966, Cl. 137-596.170.

Smith, Russell M.: *See—*
McSparran, Lloyd W.; and Smith, Russell M., 4,339,704, Cl. 322-90.000.

Smith, Russell P.: *See—*
Duttarer, Ralph M.; Estkowski, Michael H.; and Smith, Russell P., 4,339,154, Cl. 303-3.000.

Snellman, Donald L.; Lewis, Barry J.; Saunders, Arthur G.; and Hester, Wesley W. Sheet binding system. 4,339,299, Cl. 156-563.000.

Sobel, Johannes: *See—*
Schranz, Karl-Wilhelm; and Sobel, Johannes, 4,339,515, Cl. 430-17.000.

Socapex: *See—*
Malsot, Christian; and Guerrero, Michel, 4,339,165, Cl. 339-41.000.

Societa' Italiana Vetro-Siv-S.p.A.: *See—*
Paudice, Ciro; Sassanelli, Vitantonio; Di Nocco, Dino; Pracilio, Francesco; and Casa, Nicolo', 4,339,259, Cl. 65-104.000.

Societe Anonyme dite COUPAX: *See—*
d'Arras, Philippe, 4,338,701, Cl. 17-25.000.

Societe Chimique des Charbonnages-CdF CHIMIE: *See—*
Bujadoux, Karel, 4,339,392, Cl. 260-429.00R.
Durand, Pierre; and Jouffroy, Guy, 4,339,412, Cl. 422-117.000.

Societe Francaise Hoechst: *See—*
Schouteeten, Alain; and Christidis, Yani, 4,339,602, Cl. 562-466.000.

Societe Immobiliere et Financiere Suchet-Alfort (S.I.F.S.A.): *See—*
Bichet, Lucien, 4,338,696, Cl. 12-54.300.

Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, "S.N.E.C.M.A.": *See—*
Dron, Sylvain M., 4,339,739, Cl. 336-136.000.

Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, to Olympus Optical Company Limited. Method of culturing biological substances. 4,339,537, Cl. 435-240.000.

SOHIO: *See—*
Gerry, Frank S.; and Wiggins, Wayne T., 4,339,502, Cl. 428-411.000.
Guttmann, Andrew T.; and Grasselli, Robert K., 4,339,598, Cl. 560-210.000.

Sokolik, Joseph E., Jr.: *See—*
Blake, Robert J.; Sokolik, Joseph E., Jr.; and Sterman, Samuel, 4,339,338, Cl. 252-70.000.

Solartron Electronic Group Limited: *See—*
March, Adrian A. C., 4,339,177, Cl. 350-431.000.

Solomon, Frank; and Grun, Charles, to Diamond Shamrock Corporation. One pass process for forming electrode backing sheet. 4,339,325, Cl. 204-296.000.

Solovieff, Paul G., to Emhart Industries, Inc. Latch bolt operating device having improved shield construction to deter probe manipulation. 4,338,804, Cl. 70-134.000.

Sommer, Frank G.: *See—*
Perez-Mendez, Victor; and Sommer, Frank G., 4,338,948, Cl. 128-660.000.

Sony Corporation: *See—*
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.
Ohkoshi, Akio; Sato, Hiroki; Hatanaka, Masato; Ohboshi, Toshio; and Tanaka, Sakae, 4,339,694, Cl. 315-366.000.
Ohsawa, Mitsuo, 4,339,785, Cl. 361-411.000.

Sorensen, Jens O., to Trade Finance International. Prevention of permanent deformation of encased expandites. 4,338,786, Cl. 60-531.000.

Sorko-Ram, Paul A. Process for producing three-dimensional, mirrored acrylic articles. 4,339,400, Cl. 264-1.900.

Spademan, Richard G. Dynamic internal fitting system for a sport shoe. 4,338,735, Cl. 36-119.000.

Spademan, Richard G. Intravascular catheter apparatus. 4,338,934, Cl. 128-214.400.

Spar Vatten Och Energi AB: *See—*
Lindqvist, Lars A., 4,339,081, Cl. 239-552.000.

Sparton Corporation: *See—*
Devitt, John L.; Johnson, Douglas E.; and Willard, Robert S., 4,338,978, Cl. 141-1.100.

Spector, George: *See—*
Berkstresser, Harold, Jr.; and Spector, George, 4,339,056, Cl. 220-375.000.
Kemp, Kenneth; and Spector, George, 4,339,137, Cl. 273-331.000.
Tanner, Douglas; and Spector, George, 4,339,142, Cl. 280-759.000.

Speed, Stewart: *See—*
Shaw, Peter V.; and Speed, Stewart, 4,338,874, Cl. 114-50.000.

Speidel, Volker: *See—*
Bergmann, Eduard; and Speidel, Volker, 4,339,667, Cl. 307-10.0LS.

Sperberg, Lawrence R. Poly spring tires. 4,338,989, Cl. 152-354.0RB.

Spevak, Stephen T., to Potomac Applied Mechanics, Inc. Article supporting assembly. 4,339,164, Cl. 312-283.000.

Spielmann, Werner; and Schaeffer, Georg, to Hoechst Aktiengesellschaft. Process for the manufacture of phenylacetic acid and simple derivatives thereof. 4,339,594, Cl. 562-465.000.

Sprintschnik, Gerhard; Neubauer, Rudolf; and Buhr, Gerhard, to Hoechst Aktiengesellschaft. Developer mixture for developing exposed light-sensistive copying layers. 4,339,530, Cl. 430-331.000.

Staats-Westover, Robert F.: *See—*
Kanotz, William M.; Mottine, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., 4,339,298, Cl. 156-498.000.

Stadelhofer, Jurgen; Franck, Heinz-Gerhard; Kohler, Helmut; and Louis, Heinrich, to Rutgerswerke Aktiengesellschaft. Process for the production of high grade carbonaceous binders. 4,339,328, Cl. 208-8.0LE.

Stagner, Michael P.: *See—*
Outtrim, John E.; and Stagner, Michael P., 4,338,742, Cl. 46-227.000.

Staiger, Hans: *See—*
Straub, Hans F.; Kindermann, Adalbert; Burkhardt, Friedrich; and Staiger, Hans, 4,338,709, Cl. 29-26.00A.

Stal-Laval Apparat AB: *See—*
Berkestad, Karl-Erik; Danielsson, Lennart; Henriksson, Erik; Svensson, Torsten; and Ostlund, Artur, 4,339,249, Cl. 55-269.000.

Staloff, Arthur. Energy conserving thermostat. 4,339,073, Cl. 236-46.00R.

Stamicarbon, B.V.: *See—*
Jongsma, Cornelis, 4,339,599, Cl. 562-412.000.
van Geem, Paul C.; de Graaf, Theodorus F. M.; Knol, Dirk; and Plantema, Otto G., 4,339,604, Cl. 568-357.000.

Stamm, Klaus: *See—*
Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, 4,338,899, Cl. 123-339.000.

Stammann, Gunter: *See—*
Becker, Robert; Rasp, Christian; Stammann, Gunter; and Grolig, Johann, 4,339,592, Cl. 560-25.000.

Stamp, Custis L., Jr.; and Herzog, Rollie R., to General Electric Company. Microcomputer control for heat pump system. 4,338,791, Cl. 62-160.000.

Standard Oil Co., The: *See—*
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,339,394, Cl. 260-465.300.

Standard Oil Company (Indiana): *See—*
Udovich, Carl A.; and Fields, Ellis K., 4,339,595, Cl. 560-76.000.

Stanelle, Karl-Heinz. Collapsible silo. 4,338,752, Cl. 52-194.000.

Stang, Peter: *See—*
Camp, Albert T., 4,339,288, Cl. 149-8.000.

Stanmore, Leonard D. Junction box for housing cable connections. 4,339,629, Cl. 174-50.000.

Stansbury, Buddy F.: *See—*
Brereton, David A.; and Stansbury, Buddy F., 4,339,795, Cl. 364-200.000.
Brereton, David A.; and Stansbury, Buddy F., 4,339,796, Cl. 364-200.000.
Brereton, David A.; and Stansbury, Buddy F., 4,339,797, Cl. 364-200.000.

Starp, Franz; and Rittmann, Dieter. Cable release attachable to a camera shutter. 4,339,192, Cl. 354-269.000.

Stauner, Rudolf, to Sulzer Brothers Limited. Catch mechanism for a weaving machine. 4,338,973, Cl. 139-439.000.

Stavros, Anthony J.; and Crandall, Roger L., to Bethlehem Steel Corporation. Gas wiping apparatus and method of using. 4,339,480, Cl. 427-349.000.

Steglich, Wolfgang; Hurnaus, Rudolf; Gruber, Peter; and Kuebel, Boerries, to BASF Aktiengesellschaft. Preparation of 4-substituted oxazolidin-5-ones. 4,339,589, Cl. 548-228.000.

Steigerwald, Robert L.: *See—*
Park, John N.; and Steigerwald, Robert L., 4,339,671, Cl. 307-253.000.

Steinfeld, Horst E.: *See—*
Dahlhaus, Peter; Steinfeld, Horst E.; and Striepeke, Wilhelm, 4,339,077, Cl. 238-349.000.

Stening, Goran B.: *See—*
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., 4,339,445, Cl. 424-212.000.

Sterling Drug Inc.: *See—*
Gruett, Monte D.; and Lesher, George Y., 4,339,584, Cl. 546-257.000.
Zenitz, Bernard L., 4,339,576, Cl. 544-130.000.

Sterlingworth Music, Inc.: *See—*
Rendell, Stanley E., 4,338,772, Cl. 57-9.000.

Sterman, Samuel: *See—*
Blake, Robert J.; Sokolik, Joseph E., Jr.; and Sterman, Samuel, 4,339,338, Cl. 252-70.000.

Stevens, Lee D.; and Grau, Harry C. Lacrosse goal. 4,339,132, Cl. 273-400.000.

Stevens, Neill F. Tool for attaching a dropper to a fence wire. 4,338,976, Cl. 140-12.000.

Steward, John H.; and Ladouceur, Harold A., to Multifastener Corporation. Fastener orienting, tapping and collection system. 4,338,694, Cl. 10-72.00R.

Stewart, Roger G., to RCA Corporation. Noise protection circuits. 4,339,809, Cl. 365-206.000.

Still, W. Clark. Synthesis of periplanone-B. 4,339,388, Cl. 549-332.000.

Stivender, Paul M.: *See—*
Barrett, David M.; Stivender, Paul M.; and Ueberfluss, Robert E., 4,339,825, Cl. 250-490.000.

Stockburger, Hermann. Method and device for coding and/or decoding and securing data. 4,339,820, Cl. 371-53.000.

Stocker, Winfried A. Apparatus and method for simultaneously mixing specimens for performing microanalyses. 4,339,241, Cl. 23-230.00B.

Stoffelsma, Jan U., to Wavin B.V. Coloring composition for coloring thermoplastic polymers. 4,339,278, Cl. 106-308.00Q.

Strack, Hans, to Degussa AG. Process for the production of crystalline zeolite A. 4,339,417, Cl. 423-329.000.

Strack, Hans, to Degussa AG; and Henkel Kommanditgessel. Process for the production of zeolite A. 4,339,418, Cl. 423-329.000.

Strack, Hans, to Degussa AG; and Henkel Kommanditgesellshaft auf Aktien (Henkel KGaA). Process for the production of crystalline zeolite powder of type A. 4,339,419, Cl. 423-329.000.

Strack, Hans, to Degussa AG; and Henkel Kommanditgesellschaft Akten (Henkel KGaA). Process for the production of zeolite A. 4,339,420, Cl. 423-329.000.

Straub, Hans F.; Kindermann, Adalbert; Burkhardt, Friedrich; and Staiger, Hans. Magazine for storing toolholders with tools mounted therein for machine tools. 4,338,709, Cl. 29-26.00A.

Streit, Kenneth F., to Techplastics, Inc. Knock-down display stand. 4,338,866, Cl. 108-111.000.

Strick Corporation: *See—*
Abolins, Andrew, 4,339,140, Cl. 280-433.000.

Stridh, Stig A.: *See—*
Eriksson, Bertil F. H.; Helgstrand, Ake J. E.; Misiorny, Alfons; Stening, Goran B.; and Stridh, Stig A., 4,339,445, Cl. 424-212.000.

Striegler, Hellmut: *See—*
Rosenkranz, Hans J.; Striegler, Hellmut; and Bendszus, Otto, 4,339,566, Cl. 528-68.000.

Striepeke, Wilhelm: *See—*
Dahlhaus, Peter; Steinfeld, Horst E.; and Striepeke, Wilhelm, 4,339,077, Cl. 238-349.000.

Strouss, Oran L. Method of de-panning baked goods. 4,339,465, Cl. 426-293.000.

Stulen, Foster B.: *See—*
Faulkner, Lynn; and Stulen, Foster B., 4,339,247, Cl. 55-15.000.

Stumpf, Friedrich; and Scheller, Thomas, to AGFA-Gevaert Aktiengesellschaft. Motion picture camera with film marking means. 4,339,180, Cl. 352-92.000.

Sturm, Karl; and Muschaweck, Roman, to Hoechst Aktiengesellschaft. 5-Sulfamoyl-orthanilic acids, processes for their preparation and their use as medicaments. 4,339,446, Cl. 424-228.000.

Stursa, Ken V.; and Horner, Amos A. Apparatus for forming bores. 4,338,710, Cl. 29-26.00A.

Stursberg, Bernd; and Regenbrecht, Ludwig, to Peddinghaus, Rolf. Apparatus for slitting workpieces. 4,338,838, Cl. 83-467.00R.

Suga, Yoshinori: *See—*
Hasuo, Masayoshi; Suga, Yoshinori; Kojima, Kazuhisa; and Suzuki, Masatoshi, 4,339,557, Cl. 525-247.000.

Suganuma, Buro: *See—*
Matsui, Isamu; and Suganuma, Buro, 4,339,090, Cl. 242-35.50A.

Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura,

Toshikazu, to Mitsubishi Gas Chemical Co., Inc. Process for continuous production of oxymethylene polymer or copolymer. 4,339,569, Cl. 528-240.000.

Sugiura, Yoji, to Canon Kabushiki Kaisha. Electromagnetically driven focal plane shutter. 4,339,190, Cl. 354-234.000.

Sulzer Brothers Limited: *See*—
Stauner, Rudolf, 4,338,973, Cl. 139-439.000.

Sulzer Morat GmbH: *See*—
Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.

Sumitomo Chemical Company, Limited: *See*—
Baba, Kazuo; Wakatsuki, Kizuku; and Hikasa, Tadashi, 4,339,560, Cl. 526-142.000.
Mashita, Kentaro; and Hanji, Katsumi, 4,339,351, Cl. 252-429.00B.

Sumitomo Metal Industries, Ltd.: *See*—
Yamaguchi, Hisao; and Fujisawa, Kazuo, 4,338,822, Cl. 73-643.000.

Sundin, Jan A.: *See*—
Nissmo, Jim A.; Sundin, Jan A.; and Sjostrom, Lars B., 4,339,074, Cl. 236-47.000.

Suntory Limited: *See*—
Kusumi, Takenori; and Nakanishi, Koji, 4,339,588, Cl. 548-247.000.

Superior Stainless, Inc.: *See*—
Welch, Elmer S., 4,339,111, Cl. 251-331.000.

Suresh, Dev D.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; Brazdil, James F.; and Ratka, Frances I., 4,339,394, Cl. 260-465.300.

Suss, Beate: *See*—
Sauter, Fritz; Eberle, Otto; Suss, Beate; and Weissgerber, Rudolf, 4,339,455, Cl. 424-263.000.

Suzuki, Hiroaki: *See*—
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, 4,339,183, Cl. 353-78.000.

Suzuki, Hiroshi: *See*—
Kasahara, Hideo; Fukuda, Kunio; and Suzuki, Hiroshi, 4,339,376, Cl. 524-116.000.
Yanagihara, Yuzo; Noguchi, Kohji; Suzuki, Hiroshi; and Honda, Makoto, 4,339,500, Cl. 428-402.000.

Suzuki, Masatoshi: *See*—
Hasuo, Masayoshi; Suga, Yoshinori; Kojima, Kazuhisa; and Suzuki, Masatoshi, 4,339,557, Cl. 525-247.000.

Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method and apparatus for starting and stopping an open end spinning machine. 4,338,777, Cl. 57-263.000.

Suzuki, Osamu; Morita, Takayuki; Ushino, Masashi; and Hirano, Hideo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for detecting an erroneously inserted empty bobbin in a spinning frame provided with an automatic doffing and donning apparatus. 4,338,778, Cl. 57-276.000.

Suzuki, Setsuo: *See*—
Morimiya, Osami; Suzuki, Setsuo; and Monma, Shigeki, 4,339,691, Cl. 315-111.210.

Svensson, Torsten: *See*—
Berkestad, Karl-Erik; Danielsson, Lennart; Henriksson, Erik; Svensson, Torsten; and Ostlund, Artur, 4,339,249, Cl. 55-269.000.

Swailes, Charles W. Line bore gauge. 4,338,726, Cl. 33-178.00R.

Swanson, William C., to International Harvester Co. Hydraulic circuit for synchronous lift of flexible frame implements. 4,339,139, Cl. 280-43.230.

Swerdlow, Albert; and Szegedy, George, to Universal Component Systems, Inc. Method of building construction using concrete reinforced wall modules. 4,338,759, Cl. 52-743.000.

Sydor, Philip R.; and Brooker, Graham J., to Micro Consultants Limited. Digital frequency multiplier. 4,339,722, Cl. 328-38.000.

Sykes, Richard B.; Wells, Jerry S.; and Liu, Wen-Chih, to E. R. Squibb & Sons, Inc. Process for preparing antibiotic EM 4940. 4,339,535, Cl. 435-119.000.

System Industries, Inc.: *See*—
Kyser, Edmond L.; and Sears, Stephan B., 4,339,763, Cl. 346-140.00R.

Systron-Donner Corporation: *See*—
Marquess, Richard D., 4,338,819, Cl. 73-497.000.

Szegedy, George: *See*—
Swerdlow, Albert; and Szegedy, George, 4,338,759, Cl. 52-743.000.

Szekely, Jozsef: *See*—
Bajusz, Sandor; Ronai, Andras; and Szekely, Jozsef, 4,339,440, Cl. 424-177.000.

TA Mfg. Corp.: *See*—
Byerly, Robert M., 4,338,707, Cl. 24-257.000.

Tabata, Youichiro: *See*—
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,339,656, Cl. 219-494.000.

Tabb, David L.: *See*—
Magers, Thomas A.; and Tabb, David L., 4,339,242, Cl. 23-230.00B.
Magers, Thomas A.; and Tabb, David L., 4,339,243, Cl. 23-230.00B.

Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, to Minolta Camera Kabushiki Kaisha. Magnetic brush development apparatus for use in electrophotographic copying machine. 4,338,880, Cl. 118-652.000.

Tachibana, Eiichi; and Hikosaka, Shinichi, to Dai Nippon Insatsu Kabushiki Kaisha. Method for fabricating gravure printing cylinders with synthetic resin surface. 4,339,472, Cl. 427-44.000.

Tachikawa, Sachiko: *See*—
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.

Tada, Hisashi: *See*—
Yoshioka, Naonori; Tada, Hisashi; and Kashiyama, Setsuo, 4,339,490, Cl. 428-213.000.

Taguchi, Kenichi: *See*—
Ishihara, Toshinobu; Taguchi, Kenichi; and Yamamoto, Akira, 4,339,397, Cl. 260-665.00R.

Taguchi, Tohru: *See*—
Imai, Ichiro; Matsunaga, Fujihisa; Nakagawa, Hiroaki; Isibasi, Masayasu; and Taguchi, Tohru, 4,339,615, Cl. 568-768.000.

Tague, Thomas J.: *See*—
Hills, Richard E.; and Tague, Thomas J., 4,339,052, Cl. 220-226.000.

Taira, Kazuo: *See*—
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.

Takagishi, Yasushi; Doi, Yoshio; and Hoshi, Noboru, to Shionogi & Co., Ltd.; and Shin-Etsu Chemical Co., Ltd. Enterosoluble hard-capsulated medicaments. 4,339,463, Cl. 424-35.000.

Takago, Toshio; Arai, Masatoshi; and Futatsumori, Koji, to Shin-Etsu Chemical Co., Ltd. Novel organopolysiloxanes and room temperature curable organopolysiloxane compositions containing the same. 4,339,563, Cl. 528-14.000.

Takahashi, Michiko: *See*—
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,339,762, Cl. 346-140.00R.

Takahashi, Susumu: *See*—
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.

Takahashi, Yasohachi: *See*—
Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, 4,339,143, Cl. 282-27.500.

Takahashi, Yasuhiro; Ohinata, Yoshiharu; and Nakamura, Matsuo, to Riso Kagaku Corporation. Process and machine for disposing of sticky sheet. 4,339,293, Cl. 156-227.000.

Takahashi, Yutaka: *See*—
Matsuura, Tsuyoshi; Aihara, Mamoru; Takahashi, Yutaka; and Nakajima, Yoshio, 4,339,187, Cl. 354-173.000.

Takaki, Masaoki: *See*—
Hideshima, Keiji; Koyanagi, Haruo; Senda, Shuichi; Asada, Kazuyoshi; Murayama, Norio; Nihashi, Yoshiyuki; and Takaki, Masaoki, 4,339,794, Cl. 364-200.000.

Takakura, Kintomo: *See*—
Kosugi, Yukio; Ikebe, Jun; Takakura, Kintomo; and Kumagai, Yoriaki, 4,338,945, Cl. 128-421.000.

Takamiya, Bonnosuke: *See*—
Nakamura, Hirokazu; Takamiya, Bonnosuke; Miki, Takao; and Ishida, Takashi, 4,338,902, Cl. 123-454.000.

Takashige, Yoshiki: *See*—
Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, 4,338,745, Cl. 47-58.000.

Takashima, Kunihide: *See*—
Matsumoto, Fumio; Hayami, Satohiro; Haratani, Tsutomu; Takashima, Kunihide; and Kikuma, Toshio, 4,339,287, Cl. 148-111.000.

Takata, Yoshinori: *See*—
Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, 4,338,811, Cl. 73-23.100.

Takatori, Yasushi: *See*—
Shirato, Yoshiaki; Takatori, Yasushi; Hara, Toshitami; Nishimura, Yukuo; and Takahashi, Michiko, 4,339,762, Cl. 346-140.00R.

Takayama, Shinsaku: *See*—
Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, 4,338,745, Cl. 47-58.000.

Takeda Chemical Industries, Ltd.: *See*—
Kita, Harumi, 4,339,586, Cl. 546-301.000.

Takeda, Mutsuhiko: *See*—
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.

Takemoto, Tsunematsu; Arichi, Shigeru; Arihara, Shigenobu; Nakajima, Tadashi; Okuhira, Megumi; and Uchida, Yoshihiro. Gynosaponins, their use and a process for preparing the same. 4,339,442, Cl. 424-182.000.

Takeuchi, Atsushi: *See*—
Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, 4,339,813, Cl. 369-231.000.

Takeuchi, Osamu: *See*—
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.

Takeutchi, Fujio: *See*—
Kuroda, Kei-ichi; Sillou, Daniel; and Takeutchi, Fujio, 4,339,684, Cl. 313-105.00R.

Taki, Mamoru: *See*—
Miyagi, Hiroyuki; Takata, Yoshinori; Miura, Junkichi; and Taki, Mamoru, 4,338,811, Cl. 73-23.100.

Takigawa, Jun: *See*—
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.

Tamori, Nobuyuki: *See*—
Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, 4,339,813, Cl. 369-231.000.
Tamura, Misao: *See*—
Kishida, Kazuo; Sasaki, Isao; Kushi, Kenji; and Tamura, Misao, 4,339,474, Cl. 427-54.100.
Tanaka, Katsumasa: *See*—
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.
Tanaka, Kazuo: *See*—
Kaifu, Masaharu; Tanaka, Kazuo; Fujimoto, Hideo; Takigawa, Jun; Nishimura, Tomohiro; Hirose, Yagoro; and Hirai, Junu, 4,339,510, Cl. 428-654.000.
Tanaka, Sakae: *See*—
Ohkoshi, Akio; Sato, Hiroki; Hatanaka, Masato; Ohboshi, Toshio; and Tanaka, Sakae, 4,339,694, Cl. 315-366.000.
Tanaka, Susumu: *See*—
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, 4,338,880, Cl. 118-652.000.
Tanaka, Takanori: *See*—
Morishita, Masanobu; and Tanaka, Takanori, 4,339,771, Cl. 358-41.000.
Tanaka, Takeo; and Yamamoto, Osamu, to Fuji Electric Co., Ltd. Oxygen gas analyzing device. 4,339,318, Cl. 204-195.00S.
Tanaka, Tomoo: *See*—
Hashimoto, Osamu; Sato, Susumu; and Tanaka, Tomoo, 4,339,284, Cl. 148-12.00C.
Tanaka, Yoshiaki: *See*—
Inami, Mamoru; and Tanaka, Yoshiaki, 4,339,711, Cl. 324-77.00E.
Tanaka, Yutaka; Yatomi, Takeshi; and Ozaki, Yoshio, to Mitsubishi Denki ″abushiki Kaisha. Electric discharge machining apparatus. 4,339,650, Cl. 219-69.00G.
Tanigami, Satoshi, to Kabushiki Kaisha Uchida Yoko. Manually operated typing device. 4,339,209, Cl. 400-142.000.
Tanimoto, Yoshio, to Nippon Electric Co., Ltd. Clock recovery circuit for TDMA system or message switching system. 4,339,824, Cl. 375-110.000.
Tanner, Douglas; and Spector, George. Inner tube traction device. 4,339,142, Cl. 280-759.000.
Tanner, James H. Supporting device. 4,338,703, Cl. 17-44.000.
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, to Dynamit Nobel Aktiengesellschaft. String of a synthetic resin. 4,339,499, Cl. 428-373.000.
Tardot, Jacques; and Lambert, Roger, to L'ETAT FRANCAIS, represente par le Delegue General pour l'Armement. Release mechanism for aircraft released loads. 4,339,098, Cl. 244-151.00B.
Tarli, Paolo: *See*—
Meiattini, Franco; Papeschi, Giorgio; Tarli, Paolo; and Neri, Paolo, 4,339,317, Cl. 204-195.00B.
Tarro, Richard E. Container with attached pull tab opener and indicator. 4,339,053, Cl. 220-269.000.
Tary, Orville L.: *See*—
Walton, Ronald O.; and Tary, Orville L., 4,339,261, Cl. 65-178.000.
Tashiro, Yasuo: *See*—
Ohmori, Koichiro; Tashiro, Yasuo; and Nakayama, Heihachiro, 4,338,765, Cl. 53-452.000.
Tassi, Lamberto: *See*—
Ballestrazzi, Aris; and Tassi, Lamberto, 4,338,768, Cl. 53-495.000.
Tatsumi, Hisao; and Kawano, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Dryer. 4,338,730, Cl. 34-54.000.
Tauber, Gunther: *See*—
Hoffmann, Erich; Wagemann, Wolfgang; Tauber, Gunther; May, Adolf; and Bucking, Hans-Walter, 4,339,391, Cl. 260-401.000.
Tauzin, Francis, to Pomagalski S.A.; and Sigma Plastique. Pneumatic suspension system for ropeway cars. 4,338,863, Cl. 104-89.000.
Tawara, Ikuo: *See*—
Sogi, Shinroku; Izawa, Masao; Hattori, Shinichiro; Tawara, Ikuo; Shinohara, Daizo; and Tachikawa, Sachiko, 4,339,537, Cl. 435-240.000.
Taylor, Richard J.: *See*—
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,339,803, Cl. 364-724.000.
TDK Electronics Co., Ltd.: *See*—
Tokuoka, Yasumichi, 4,339,425, Cl. 423-633.000.
Teague, Richard K.: *See*—
Yu, Henry H. S.; and Teague, Richard K., 4,339,782, Cl. 361-229.000.
Technicon Instruments Corporation: *See*—
Chu, Douglas K., 4,339,533, Cl. 435-17.000.
Techplastics, Inc.: *See*—
Streit, Kenneth F., 4,338,866, Cl. 108-111.000.
Teledyne Industries, Inc.: *See*—
Guajardo, Ciro, 4,339,670, Cl. 307-252.00A.
Temple, Stephen, to Cambridge Consultants Limited. Apparatus and method for generating a dispersed dot half tone picture from a continuous tone picture. 4,339,774, Cl. 358-283.000.
Tencza, Thomas M., to Bristol-Myers Company. Capsule product containing high dosage of aspirin in powder or granulated form and alkaline tablet or pellet comprising magnesium carbonate, calcium carbonate and a magnesium dry component. 4,339,428, Cl. 424-21.000.
Terada, Haruyoshi: *See*—
Oda, Nobuyuki; and Terada, Haruyoshi, 4,339,310, Cl. 204-38.00R.
Terada, Takami: *See*—
Mori, Mamoru; and Terada, Takami, 4,339,103, Cl. 248-397.000.
Terada, Tsutomu: *See*—
Yoshimura, Tastushiro; and Terada, Tsutomu, 4,339,553, Cl. 524-544.000.
Terashima, Takeo: *See*—
Fujita, Toshiji; Yamada, Chihiko; Terashima, Takeo; and Nojima, Masaki, 4,339,769, Cl. 358-6.000.
Terasita, Takaaki: *See*—
Nakauchi, Kenji; and Terasita, Takaaki, 4,339,185, Cl. 354-31.000.
Terminiello, Michael A.; and Gebura, Stanley E., to BASF Wyandotte Corporation. Rotating riffler. 4,338,982, Cl. 141-132.000.
Texaco Inc.: *See*—
Brown, Winthrop K., 4,339,663, Cl. 250-270.000.
Hammond, Kenneth G.; and Chafetz, Harry, 4,339,336, Cl. 252-34.000.
Knifton, John F., 4,339,545, Cl. 518-700.000.
Patterson, John A.; Crawford, Wheeler C.; and Wilson, James R., 4,339,622, Cl. 585-433.000.
Texas Instruments Incorporated: *See*—
Barlow, Carl A., Jr.; and Reid, Lee R., 4,338,950, Cl. 128-687.000.
Ramsey, Richard A., 4,339,675, Cl. 307-473.000.
Ramsey, Richard A., 4,339,676, Cl. 307-473.000.
Rao, G. R. Mohan, 4,339,766, Cl. 357-41.000.
Theissen, Robert J., to Rhone-Poulenc Agrochimie. Herbicidal nitroalkyl 5-[2-chloro-4-(trifluoromethyl)phenoxy]-2-nitrobenzoates. 4,339,268, Cl. 71-108.000.
Thermacon Industries, Inc.: *See*—
Crothers, Charles J., 4,338,756, Cl. 52-539.000.
Thermatool Corp.: *See*—
Harriau, Robert R.; and Udall, Humfrey N., 4,339,654, Cl. 219-107.000.
Thiboutot, Robert, to Les Entreprises Rotot Ltee. Collapsible folding cart. 4,339,141, Cl. 280-652.000.
Thievessen, Karl; Weiss, Peter; and Welkers, Knut, to Jagenberg Werke AG. Device for chucking tubular winding cores. 4,339,094, Cl. 242-68.200.
Thold, Dezso D.: *See*—
Bailey, Cecil; Young, Albert C.; and Thold, Dezso D., 4,339,652, Cl. 219-95.000.
Thomson-CSF: *See*—
Mage, Jean-Claude; and Deljurie, Claude, 4,339,543, Cl. 501-134.000.
Thorsteinson, Erlind M.: *See*—
Decker, Harry J.; and Thorsteinson, Erlind M., 4,339,355, Cl. 252-464.000.
Thulin, Gunnar: *See*—
Johansson, Ingvar H.; Johansson, Helle G.; Webing, Kurt; and Thulin, Gunnar, 4,339,047, Cl. 220-1.500.
Thut, Timothy T. Fresh air fountain air filter arrangement. 4,339,250, Cl. 55-316.000.
Tice, Isabelle L.: *See*—
Tice, Richard P.; and Tice, Isabelle L., 4,339,043, Cl. 209-44.000.
Tice, Richard P.; and Tice, Isabelle L. Portable mining apparatus. 4,339,043, Cl. 209-44.000.
Tiethof, Jack A.: *See*—
Pitts, Frank; Tiethof, Jack A.; and Burns, Robert A., 4,339,352, Cl. 252-449.000.
Times Fiber Communications, Inc.: *See*—
Smith, Kenneth I., 4,339,733, Cl. 333-237.000.
Timofeev, Leonid K.: *See*—
Malikov, Georgy F.; Chukhno, Vladimir A.; Timofeev, Leonid K.; Ibragimov, Khakim N., deceased; and Ibragimova, Maria F., administrator, 4,339,010, Cl. 177-134.000.
Tison, Harley R. Wood truss forming apparatus. 4,339,117, Cl. 269-289.0MR.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Onodera, Takashi; Komine, Kikuji; Ohashi, Fumio; and Naito, Tsutomo, 4,339,619, Cl. 570-183.000.
Tobe, Akihiro: *See*—
Kikumoto, Ryoji; Tobe, Akihiro; Fukami, Harukazu; and Egawa, Mitsuo, 4,339,580, Cl. 544-360.000.
Toda, Minoru; and Osaka, Susumu, to RCA Corporation. Rotative motor using a piezoelectric element. 4,339,682, Cl. 310-321.000.
Toho Beslon Co., Ltd.: *See*—
Kosuda, Hiroyuki; and Niijima, Kenji, 4,339,021, Cl. 191-50.000.
Tokuno, Masateru, to Rengo Kabushiki Kaisha. System for controlling width and position of glue or the like applied to a roll. 4,338,881, Cl. 118-673.000.
Tokuoka, Yasumichi, to TDK Electronics Co., Ltd. Process for producing acicular hydrated ferric oxide particles. 4,339,425, Cl. 423-633.000.
Tokyo Electric Co., Ltd.: *See*—
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, 4,339,807, Cl. 364-900.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Hashimoto, Masaru, 4,339,674, Cl. 307-362.000.
Hirose, Masahiko; Yasui, Tsuyoshi; and Yotuyanagi, Masahiko, 4,339,326, Cl. 204-298.000.
Iida, Kazuhiko, 4,339,805, Cl. 364-900.000.
Inoue, Kiyoshi; and Watanabe, Minoru, 4,339,501, Cl. 428-404.000.
Morimiya, Osami; Suzuki, Setsuo; and Monma, Shigeki, 4,339,691, Cl. 315-111.210.
Nakamura, Junichi; Hata, Seiji; and Yamasaki, Iwao, 4,339,765, Cl. 357-36.000.
Sasaki, Hiroshi; and Ariga, Yoshio, 4,339,119, Cl. 271-180.000.
Tatsumi, Hisao; and Kawano, Takashi, 4,338,730, Cl. 34-54.000.

Yamaura, Mitsuru; Kondow, Ryotaro; Mitani, Megumu; and Okamoto, Eiichi, 4,339,802, Cl. 364-483.000.
Tokyo Shibaura Electric Co., Ltd.: *See—*
Muraoka, Hisashi; Asano, Masafumi; Ohashi, Taizo; and Shimazaki, Yuzo, 4,339,340, Cl. 252-79.500.
Satou, Takahisa, 4,339,410, Cl. 376-216.000.
Tolasch, Gerhard: *See—*
Base, Horst; Tolasch, Gerhard; and Bantien, Jurgen, 4,339,026, Cl. 198-347.000.
Tom McGuane Industries: *See—*
Ludwig, George C., 4,339,743, Cl. 338-206.000.
Tomihashi, Nobuyuki: *See—*
Okamura, Kazuo; Daimon, Shigeo; and Tomihashi, Nobuyuki, 4,339,518, Cl. 430-126.000.
Tomisawa, Norio; Takeuchi, Atsushi; and Tamori, Nobuyuki, to Nippon Gakki Seizo Kabushiki Kaisha. Apparatus for detecting groove end of record disk. 4,339,813, Cl. 369-231.000.
Tomoda, Masayasu, to Daikin Kogyo Co., Ltd. Adhesive composition for fluorinated rubbers. 4,339,565, Cl. 528-27.000.
Toppan Printing Co., Ltd.: *See—*
Fujita, Toshiji; Yamada, Chihiko; Terashima, Takeo; and Nojima, Masaki, 4,339,769, Cl. 358-6.000.
Torige, Kazuo: *See—*
Kikuchi, Nobuji; Kisaka, Yoshiyuki; Torige, Kazuo; and Onose, Masayuki, 4,339,315, Cl. 204-129.850.
Torii, Shigeru; Nakane, Shoji; Shirakawa, Toshifumi; and Akada, Mitsuo, to Otsuka Kagaku Yakuhin Kabushiki Kaisha. Process for preparing anisaldehyde. 4,339,607, Cl. 568-426.000.
Torres, Rafael; and Henderson, John G. N., to RCA Corporation. Automatic tuning circuit arrangement with switched impedances. 4,339,827, Cl. 455-188.000.
Totten, George E.; Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., to Union Carbide Corporation. Mildewcidal silane compounds. 4,339,581, Cl. 546-14.000.
Toyo Seikan Kaisha Limited: *See—*
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, 4,339,483, Cl. 428-35.000.
Toyo Soda Manufacturing Co. Ltd.: *See—*
Hashimoto, Koji; Masumoto, Tsuyoshi; Hara, Motoi; Asami, Katsuhiko; and Sakiyama, Kazutaka, 4,339,270, Cl. 148-403.000.
Toyo Tokushu Kiki Co., Ltd.: *See—*
Yamada, Shoichi, 4,339,749, Cl. 340-680.000.
Toyofuku, Kunitaka: *See—*
Ichimura, Kunihiro; Takeuchi, Osamu; Kusama, Hideo; Yamazaki, Kazuo; Saka, Akira; Ito, Hiroshi; and Toyofuku, Kunitaka, 4,339,524, Cl. 430-270.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Kawaguchi, Hiroshi, 4,338,787, Cl. 60-562.000.
Mori, Mamoru; and Terada, Takami, 4,339,103, Cl. 248-397.000.
Nagasaka, Yasumasa, 4,339,144, Cl. 293-120.000.
Tracy, Thomas R., to Palladium Corporation. Safety chute. 4,339,019, Cl. 182-47.000.
Trade Finance International: *See—*
Sorensen, Jens O., 4,338,786, Cl. 60-531.000.
Trane Company, The: *See—*
Saunders, James F.; and Krocker, Robert E., 4,338,790, Cl. 62-80.000.
Trevithick, Mark W.: *See—*
Donnally, Robert B.; and Trevithick, Mark W., 4,339,225, Cl. 414-690.000.
Tricot, Marc; and Daniel, Jean-Claude, to Rhone-Poulenc Industries. Process for the preparation of magnetic beads of vinylaromatic polymers. 4,339,337, Cl. 252-62.540.
Trong, Ming-Ching. Oil saver for vehicles. 4,338,908, Cl. 123-572.000.
Trubiano, Antoine. Container basket for wheelchair. 4,339,063, Cl. 224-273.000.
Truchot, Eric: *See—*
Fleche, Guy; Gaset, Antoine; Gorrichon, Jean-Pierre; Truchot, Eric; and Sicard, Philippe, 4,339,387, Cl. 549-488.000.
Trump, Martin R.: *See—*
Michael, Peter C.; Taylor, Richard J.; and Trump, Martin R., 4,339,803, Cl. 364-724.000.
Tsou, Ivan H.; and Smith, Marc L., to Wyandotte Paint Products Company. Cationic coating compositions containing nitrogen heterocyclic materials. 4,339,368, Cl. 523-414.000.
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, to Hitachi, Ltd. Nuclear magnetic resonance spectrometer. 4,339,717, Cl. 324-313.000.
Tsui, Kwok W.; and Yuen, Sing C. J., to Arco Industries Ltd. Toy dryer. 4,338,741, Cl. 46-14.000.
Tsui, Paulus T. K.: *See—*
Ali, Akhtar; and Tsui, Paulus T. K., 4,339,390, Cl. 260-397.450.
Tsumori, Hiroshi: *See—*
Misawa, Masanaru; Takayama, Shinsaku; Takashige, Yoshiki; and Tsumori, Hiroshi, 4,338,745, Cl. 47-58.000.
Tsushima, Sakae; and Sagami, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for fusion bonding of fluorocarbon type polymers which comprises counter-ion substitution prior to fusion bonding. 4,339,549, Cl. 521-28.000.
Tsuya, Noboru; and Arai, Kenichi, to Maeda, Shiro. Method for manufacturing a thin and flexible ribbon of superconductor material. 4,339,508, Cl. 428-606.000.
Tucker, Benjamin W.: *See—*
Richter, Reinhard H.; Tucker, Benjamin W.; and Ulrich, Henri, 4,339,381, Cl. 260-239.30B.
Turko, John D.; and Petro, John D., to Commercial Shearing, Inc. Control and relief valves. 4,338,962, Cl. 137-269.000.
Turnbull, James A.: *See—*
Bayard, Michael A.; and Turnbull, James A., 4,338,933, Cl. 128-214.00R.
Turner, William D. Electronic transfer organ. 4,338,849, Cl. 84-345.000.
Tutty, Geoffrey C., to INCA Limited. Color developable composition. 4,339,275, Cl. 524-255.000.
Twin Disc, Incorporated: *See—*
Pelligrino, Paul A., 4,338,832, Cl. 74-866.000.
Tyler, Jonathan M. Miniature slab gel electrophoresis system. 4,339,327, Cl. 204-299.00R.
Tyler Refrigeration Corporation: *See—*
Ibrahim, Fayez F., 4,338,792, Cl. 62-256.000.
Uchida, Yoshihiro: *See—*
Takemoto, Tsunematsu; Arichi, Shigeru; Arihara, Shigenobu; Nakajima, Tadashi; Okuhira, Megumi; and Uchida, Yoshihiro, 4,339,442, Cl. 424-182.000.
Uchimura, Mitsuo; Oana, Masao; and Nishimura, Yoshiharu, to Tokyo Electric Co., Ltd. Postal charge processing system including a weight measuring unit, postal charge calculating unit and a meter stamp issuing unit. 4,339,807, Cl. 364-900.000.
Udall, Humfrey N.: *See—*
Harriau, Robert R.; and Udall, Humfrey N., 4,339,654, Cl. 219-107.000.
Udovich, Carl A.; and Fields, Ellis K., to Standard Oil Company (Indiana). Hexa(meta-,para-carboxyphenyl)benzene compounds. 4,339,595, Cl. 560-76.000.
Ueberfluss, Robert E.: *See—*
Barrett, David M.; Stivender, Paul M.; and Ueberfluss, Robert E., 4,339,825, Cl. 250-490.000.
Ueda, Kazuo, to Central Glass Company, Limited. Method of producing curved and partly colored glass sheet. 4,339,257, Cl. 65-60.500.
Ueda, Nobuo; and Yamagishi, Seiichi, to Minolta Camera Kabushiki Kaisha. Control systems for microfilm readers. 4,339,182, Cl. 353-27.00R.
Ueguri, Shigeo: *See—*
Komura, Hirotsugu; Ueguri, Shigeo; and Tabata, Youichiro, 4,339,656, Cl. 219-494.000.
Uemura, Namio: *See—*
Kato, Kochi; and Uemura, Namio, 4,339,205, Cl. 366-296.000.
Kato, Koichi; and Uemura, Namio, 4,339,536, Cl. 435-142.000.
Ueno, Hiroshi; Kojima, Shunji; Taira, Kazuo; Katsura, Tadahiko; Horiguchi, Makoto; and Takahashi, Susumu, to Toyo Seikan Kaisha Limited. Welded can with an organic, metallic, organic layer adjacent the weld. 4,339,483, Cl. 428-35.000.
Ueyama, Yoshinari; Mori, Kikuo; and Matsushita, Hideo, to Pegasus Sewing Machine Mfg. Co., Ltd. Thread chain sewing method and device for use in the two-needle overlock sewing machine. 4,338,873, Cl. 112-262.100.
UIP Engineered Products Corporation: *See—*
Hart, Wallace L.; and Ricketts, John W., 4,339,202, Cl. 366-8.000.
Ukigai, Toshiyuki: *See—*
Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, 4,339,246, Cl. 44-51.000.
Ulicki, Edward M.; and Schlisser, Gabor, to U.S. Philips Corporation. Alarm control center. 4,339,746, Cl. 340-518.000.
Ulin, Roy A.: *See—*
Hof, Craig R.; and Ulin, Roy A., 4,339,207, Cl. 374-160.000.
Ulrich, Henri: *See—*
Richter, Reinhard H.; Tucker, Benjamin W.; and Ulrich, Henri, 4,339,381, Cl. 260-239.30B.
Umemura, Toshikazu: *See—*
Sugio, Akitoshi; Amemiya, Akira; Kunii, Tadashi; Furusawa, Tomotaka; Takeda, Mutsuhiko; Tanaka, Katsumasa; and Umemura, Toshikazu, 4,339,569, Cl. 528-240.000.
Underwood, Gene E., to 3U Partners. Process of forming a nozzle. 4,339,406, Cl. 264-154.000.
Unicorn Electrical Products: *See—*
Siglock, John V., 4,339,695, Cl. 315-276.000.
Union Camp Corporation: *See—*
Hollis, Samuel D., 4,339,377, Cl. 260-99.500.
Union Carbide Corporation: *See—*
Blake, Robert J.; Sokolik, Joseph E., Jr.; and Sterman, Samuel, 4,339,338, Cl. 252-70.000.
Decker, Harry J.; and Thorsteinson, Erlind M., 4,339,355, Cl. 252-464.000.
Decker, Quintin W.; Marcus, Erich; and Zika, Harry T., 4,339,236, Cl. 8-137.000.
D'Silva, Themistocles D. J.; and Hodakowski, Leonard E., 4,339,444, Cl. 424-202.000.
Jacques, Albert M. V., 4,339,601, Cl. 562-438.000.
Kurtz, Stuart J.; and Apgar, Howard G., Jr., 4,339,507, Cl. 428-522.000.
Maresca, Louis M., 4,339,568, Cl. 528-126.000.
Totten, George E.; Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,339,581, Cl. 546-14.000.
White, Robert D.; and Weiss, Donald P., 4,339,788, Cl. 362-157.000.
United States of America
Air Force: *See—*
Leingang, John L., 4,338,783, Cl. 60-225.000.
Army: *See—*
Jarvis, Richard L., 4,338,852, Cl. 89-37.00E.
Jones, Robert W.; and Cason, Charles M., 4,339,199, Cl. 356-213.000.

Kwatnoski, Richard; and McHugh, Robert J., 4,338,862, Cl. 102-516.000.
Neumeyer, Martin J., 4,338,853, Cl. 89-41.00R.
Rhodes, Richard R.; and Kenney, Robert L., Jr., 4,338,861, Cl. 102-261.000.
Smith, James L., 4,339,178, Cl. 350-432.000.
Energy: *See—*
Gillespie, Peter J., 4,339,049, Cl. 220-23.400.
McCabe, Francis J., 4,338,967, Cl. 137-601.000.
Morgan, Peter E. D., 4,339,511, Cl. 429-189.000.
Pruett, David J.; and Howerton, William B., 4,339,309, Cl. 203-29.000.
Health & Human Services: *See—*
Boretos, John W.; and Iriguchi, Norio, 4,339,295, Cl. 156-275.700.
Navy: *See—*
Basch, William J.; and Moore, Charles D., 4,339,662, Cl. 250-229.000.
Bates, Jack R.; and Collier, William E., Jr., 4,339,050, Cl. 220-437.000.
Christe, Karl O.; and Wilson, William W., 4,339,423, Cl. 423-462.000.
Gawain, Theodore H.; and Biblarz, Oscar, 4,339,678, Cl. 310-10.000.
Schoolar, Richard B., 4,339,764, Cl. 357-30.000.
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,339,683, Cl. 310-364.000.
U.S. Philips Corporation: *See—*
De Bijl, Adrianus M. J.; and De Vogel, Johannes A., 4,339,693, Cl. 315-225.000.
Hapke, Friedrich, 4,339,710, Cl. 324-73.00R.
Langer, Erich; Mach, Helmut; and Melwisch, Harald, 4,339,776, Cl. 360-69.000.
Ulicki, Edward M.; and Schlisser, Gabor, 4,339,746, Cl. 340-518.000.
van der Waal, Jan; and Vermeulen, Gerard, 4,339,516, Cl. 430-24.000.
Verweel, Jan, 4,339,688, Cl. 313-403.000.
United Technologies Corporation: *See—*
Lada, Henry; and Fishter, Robert E., 4,339,282, Cl. 134-3.000.
Mason, Kenneth R.; and Day, Edward G., 4,338,878, Cl. 118-429.000.
Patrick, John P.; Kos, Joseph M.; and Harner, Kermit I., 4,339,666, Cl. 290-44.000.
Universal Component Systems, Inc.: *See—*
Swerdlow, Albert; and Szegedy, George, 4,338,759, Cl. 52-743.000.
Universal Instruments Corporation: *See—*
Ragard, Philip A., 4,338,763, Cl. 53-399.000.
University of California, Regents of the: *See—*
Meares, Claude F.; and Anderson, Leslie D., 4,339,426, Cl. 424-1.000.
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University of Minn., The Regents of the: *See—*
Liu, Benjamin Y. H.; Kittelson, David B.; Dolan, Daniel F.; and Pui, David Y. H., 4,338,784, Cl. 60-274.000.
University of Missouri, The Curators of the: *See—*
Fahim, Mostafa S., 4,339,438, Cl. 424-145.000.
University of Pittsburgh: *See—*
Hwang, Charles C., 4,338,919, Cl. 126-435.000.
University of Sydney: *See—*
Harding, Geoffrey L., 4,339,484, Cl. 428-36.000.
University of Utah: *See—*
Healy, George W., 4,339,269, Cl. 75-5.000.
Unterberger, Hans: *See—*
Fromm, Ingrid; and Unterberger, Hans, 4,339,658, Cl. 250-227.000.
UOP Inc.: *See—*
Fink, Allen H., 4,338,788, Cl. 60-648.000.
Imai, Tamotsu; and Schmidt, Robert J., 4,339,617, Cl. 568-899.000.
Upjohn Company, The: *See—*
Koehler, Charles E.; McClellan, Thomas R.; and Murray, Pat L., 4,339,343, Cl. 252-182.000.
Richter, Reinhard H.; Tucker, Benjamin W.; and Ulrich, Henri, 4,339,381, Cl. 260-239.30B.
Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., 4,339,539, Cl. 435-253.000.
Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, to Windmoller & Holscher. Method of controlling the film thickness at a blown film extruder installation. 4,339,403, Cl. 264-40.100.
Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, to Windmoller & Holscher. Method of controlling the film thickness at a blown film installation. 4,339,404, Cl. 264-40.100.
Urich, Carl L. Method and apparatus for producing and supplying atomized fuel to an internal combustion engine. 4,338,905, Cl. 123-525.000.
Urschel, Edward O., to Litton Systems, Inc. Low-inertia high-torque synchronous induction motor. 4,339,679, Cl. 310-49.00R.
Ushino, Masashi: *See—*
Suzuki, Osamu; Morita, Takayuki; Ushino, Masashi; and Hirano, Hideo, 4,338,778, Cl. 57-276.000.
USM Corporation: *See—*
Berrill, William H.; and Bosworth, George H., 4,338,695, Cl. 12-10.100.
Powderly, John, 4,338,714, Cl. 29-433.000.
Usry, Gerald O. Through fault pressure filter for fault pressure relay. 4,338,969, Cl. 138-44.000.
Utagawa, Ken; and Shirasu, Hiroshi, to Nippon Kogaku K.K. Apparatus for detecting displacement of optical image. 4,339,665, Cl. 250-578.000.
Utsumi, Yoshiharu: *See—*
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, 4,339,717, Cl. 324-313.000.
Uyeda, Tim M.; and Mahnke, Parker E., to Marcy Gymnasium Equipment Co. Single column exercising apparatus. 4,339,125, Cl. 272-118.000.
Valbona, Bruno M.; and Pound, William C., to Dynamics Corporation of America. Drink mixer. 4,339,639, Cl. 200-52.00R.
Valead, Rick R., to Castle Rock Enterprises. Mason's guide. 4,338,728, Cl. 33-406.000.
Valley, Richard L.: *See—*
Jason, Barry L.; Hall, Scott M.; and Valley, Richard L., 4,339,729, Cl. 330-294.000.
Van Bemmel, Peter P.: *See—*
Nichols, James F.; and Van Bemmel, Peter P., 4,339,810, Cl. 367-49.000.
VanCamp, Loretta: *See—*
Rosenberg, Barnett; VanCamp, Loretta; and Krigas, Thomas, 4,339,437, Cl. 424-131.000.
van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil compacting rollers. 4,339,004, Cl. 172-537.000.
van der Lely, Cornelis. Soil cultivating implement including dispenser and support roller. 4,338,871, Cl. 111-10.000.
van der Lely, Cornelis. Soil cultivating implements. 4,339,003, Cl. 172-47.000.
van der Waal, Jan; and Vermeulen, Gerard, to U.S. Philips Corporation. Method of manufacturing reproduction masks for producing a pattern of elongate apertures in a shadow mask of a color cathode ray tube. 4,339,516, Cl. 430-24.000.
Van Dyke, John W., Jr., to Miles Laboratories, Inc. Quinolizidine-propionanilide compounds. 4,339,582, Cl. 546-112.000.
van Geem, Paul C.; de Graaf, Theodorus F. M.; Knol, Dirk; and Plantema, Otto G., to Stamicarbon, B.V. Method for the preparation of cyclohexanol and/or cyclohexanone. 4,339,604, Cl. 568-357.000.
Van Gheluwe, George E. A.; Weaver, Robert L.; Dadic, Miroslav; and Knudsen, Finn B., to Molson Companies, Limited, The. Anti-foaming agent from malt. 4,339,466, Cl. 426-430.000.
Vanguard Machinery Corp.: *See—*
Pulda, William F., 4,339,220, Cl. 414-84.000.
Van Loveren, Augustinus G.: *See—*
Boden, Richard M.; Dekker, Lambert; Schmitt, Frederick L.; and Van Loveren, Augustinus G., 4,339,344, Cl. 252-187.240.
Van Vliet, Jasper A.; and Elder, James E. Cattle head holder. 4,338,885, Cl. 119-96.000.
Varian Associates, Inc.: *See—*
Fisher, Gerald M.; and Maget, Henri J. R., 4,339,626, Cl. 136-248.000.
Vasilakis, Andrew D.: *See—*
Gerstmann, Joseph; and Vasilakis, Andrew D., 4,338,888, Cl. 122-16.000.
Vaughan, Quentin D.: *See—*
Kaufman, Arthur L.; Vaughan, Quentin D.; von Dohlen, Roy G.; and Kopala, Richard, 4,339,197, Cl. 355-58.000.
Vaughn, John F. Fire dog. 4,338,916, Cl. 126-298.000.
VEB Kombinat Fortschritt Landmaschinen Neustadt in Sachsen: *See—*
Berth, Dieter; Hohlfeld, Gottfried; Oliva, Klaus; and Noack, Christian, 4,339,014, Cl. 180-54.00A.
VEB Werkzeugkombinat Schmalkalden: *See—*
Hummel, Wolfgang; Koch, Gerhard; Wilhelm, Siegfried; and Zorn, Horst, 4,338,771, Cl. 56-294.000.
Veda, Inc.: *See—*
Engelmann, John A., 4,339,265, Cl. 71-9.000.
Moore, Walter T., 4,338,922, Cl. 126-452.000.
Vedamuthu, Ebenezer R., to Microlife Technics, Inc. Stabilizer producing *Streptococcus thermophilus*. 4,339,464, Cl. 426-43.000.
Vencraft Corporation: *See—*
Gundlach, Robert W., 4,338,727, Cl. 33-269.000.
Vergnano, Lelio C.: *See—*
Seymour, Raymond K.; Murphy, Frank H.; and Vergnano, Lelio C., 4,339,642, Cl. 200-153.00G.
Verkstadsproduktion I Borlange AB: *See—*
Lindgren, Kenneth B., 4,338,812, Cl. 73-40.50R.
Vermeulen, Gerard: *See—*
van der Waal, Jan; and Vermeulen, Gerard, 4,339,516, Cl. 430-24.000.
Vertesy, Laszlo: *See—*
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,339,436, Cl. 424-115.000.
Verweel, Jan, to U.S. Philips Corporation. Cathode-ray tube having a magnetic quadrupole shadow mask. 4,339,688, Cl. 313-403.000.
Victor Company of Japan, Ltd.: *See—*
Goto, Kunio, 4,339,812, Cl. 369-170.000.
Inami, Mamoru; and Tanaka, Yoshiaki, 4,339,711, Cl. 324-77.00E.
Vida, Julius A.: *See—*
Samour, Carlos M.; and Vida, Julius A., 4,339,454, Cl. 424-254.000.
Visual Graphics Corporation: *See—*
Kaufman, Arthur L.; Vaughan, Quentin D.; von Dohlen, Roy G.; and Kopala, Richard, 4,339,197, Cl. 355-58.000.
Vitale, Joseph W., to Perfect Fit Industries, Inc. One-piece quilted mattress shield. 4,338,693, Cl. 5-500.000.
Vitatron Scientific B.V.: *See—*
de Jonge, Jan H.; and Hogen Esch, Johannes H. L., 4,339,699, Cl. 318-561.000.

Vitro Tec Fideicomiso: *See—*
Martin, John K., 4,339,258, Cl. 65-79.000.
Martin, John K., 4,339,263, Cl. 65-225.000.

Vlisco B.V.: *See—*
Beekhuis, Lambert J., 4,339,481, Cl. 427-428.000.

Voest-Alpine Aktiengesellschaft: *See—*
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Vogel & Halke: *See—*
Vogel, Sonke; and Muller, Frohmut, 4,339,012, Cl. 177-262.000.

Vogel, Sonke; and Muller, Frohmut, to Vogel & Halke. Baby scale. 4,339,012, Cl. 177-262.000.

Vogelsgesang, Roland: *See—*
Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, 4,339,570, Cl. 528-272.000.

Vogler, Daniel. Neck exercising device. 4,339,124, Cl. 272-94.000.

Voigt, Gunter: *See—*
Duyster, Hubert; Voigt, Gunter; and Budan, Gerhard, 4,339,274, Cl. 106-106.000.

Volkov, Mstislav V.; Oganesian, Oganes V.; and Povarov, Leonid A. Device for restoring the function of the lower extremities. 4,338,927, Cl. 128-92.00A.

Volkswagenwerk Aktiengesellschaft: *See—*
Geiger, Istvan; Stamm, Klaus; Bruning, Reinhard; and Meyer, Manfred, 4,338,899, Cl. 123-339.000.

Volnina, Elvira A.: *See—*
Guselnikov, Leonid E.; Polyakov, Jury P.; Volnina, Elvira A.; and Nametkin, Nikolai S., 4,339,562, Cl. 528-14.000.

von Dohlen, Roy G.: *See—*
Kaufman, Arthur L.; Vaughan, Quentin D.; von Dohlen, Roy G.; and Kopala, Richard, 4,339,197, Cl. 355-58.000.

Vorbeck, Donald W.: *See—*
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Vosper, George W. Screw operated jack. 4,339,113, Cl. 254-13.000.

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Aldinger, Fritz; Biberbach, Elke; Bischoff, Albrecht; and Harmsen, Nils, 4,339,644, Cl. 200-266.000.

Wada, Kenichi: *See—*
Tabuchi, Kenji; Tanaka, Susumu; Wada, Kenichi; and Oka, Tateki, 4,338,880, Cl. 118-652.000.

Wagemann, Wolfgang: *See—*
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Hoffmann, Erich; Wagemann, Wolfgang; Tauber, Gunther; May, Adolf; and Bucking, Hans-Walter, 4,339,391, Cl. 260-401.000.

Wagner, Helmar R.: *See—*
Raaf, Helmut; Becker, Dieter; Frosch, Franz; Harth, Helmut; and Wagner, Helmar R., 4,339,429, Cl. 424-49.000.

Wakatsuki, Kizuku: *See—*
Baba, Kazuo; Wakatsuki, Kizuku; and Hikasa, Tadashi, 4,339,560, Cl. 526-142.000.

Wakimizu, Yukio: *See—*
Saguchi, Norio; Ishii, Hideki; Sakakibara, Yoshiaki; Nagasawa, Masakazu; Saitoh, Osami; Wakimizu, Yukio; and Kanematsu, Susumu, 4,339,685, Cl. 313-113.000.

Wakui, Natsuko: *See—*
Isogai, Nobuo; Hosokawa, Motoyuki; Okawa, Takashi; Wakui, Natsuko; and Watanabe, Toshiyasu, 4,339,597, Cl. 560-205.000.

Walker, Jack M.: *See—*
Lascelles, Daniel J.; and Walker, Jack M., 4,339,638, Cl. 200-52.00R.

Walker, Morris P.: *See—*
Brooks, Wayne E.; Hodges, Jimmie R.; and Walker, Morris P., 4,339,312, Cl. 204-95.000.

Wallhausser, Karl H.: *See—*
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Walter, James M.: *See—*
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Walter, Lothar: *See—*
Olschewski, Armin; Brandenstein, Manfred; Walter, Lothar; and Ernst, Horst M., 4,339,157, Cl. 308-6.00C.

Walter, Manfred: *See—*
Eberwein, Eugen; Elsasser, Heinrich; Gaiser, Willi; Leins, Eberhard; Pape, Klaus; and Walter, Manfred, 4,338,799, Cl. 66-125.00R.

Walters, Merlin L.: *See—*
Kronberg, Richard E.; and Walters, Merlin L., 4,338,984, Cl. 141-331.000.

Walters, William O., to Boeing Company, The. Method and system for measuring width and amplitude of current pulse. 4,339,712, Cl. 324-102.000.

Walton, Ronald O.; and Tary, Orville L., to Libbey-Owens-Ford Company. Drive system for glass furnace stirrers. 4,339,261, Cl. 65-178.000.

Wamser, Anton: *See—*
Grof, Helmut; Reimpell, Uwe; and Wamser, Anton, 4,339,624, Cl. 373-52.000.

Wang, Jish M.; and McCary, Richard O., to General Electric Company. Magnetic printing head having a high signal-to-noise ratio. 4,339,760, Cl. 346-74.500.

Wang, Patricia C.; and Wingard, Robert E., Jr., to Dynapol. Free amine-containing polymeric dyes. 4,339,237, Cl. 8-405.000.

Wang, Su-Sun: *See—*
Goldstein, Allan L.; McClure, John E.; and Wang, Su-Sun, 4,339,427, Cl. 424-1.000.

Ward, Christopher M. Breast measuring apparatus. 4,338,953, Cl. 128-774.000.

Warehime, Norwood R. Mallet driven sliding disc game and apparatus. 4,339,133, Cl. 273-126.00R.

Warnaka, Glenn E., to Lord Corporation. Sound absorbing structure. 4,339,018, Cl. 181-286.000.

Warner, Bert J.; Mathis, Melwyn L.; and Johnson, Warren F., to Mobil Oil Corporation. Method and apparatus for mixing gaseous oxidant and lixiviant in an in situ leach operation. 4,339,152, Cl. 299-5.000.

Watanabe, Minoru: *See—*
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Watanabe, Toshiyasu: *See—*
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Wavin B.V.: *See—*
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Weaver, John M.: *See—*
Ritchey, Thomas W.; Weaver, John M.; and Sapone, Martin, 4,339,432, Cl. 424-54.000.

Weaver, Robert L.: *See—*
Van Gheluwe, George E. A.; Weaver, Robert L.; Dadic, Miroslav; and Knudsen, Finn B., 4,339,466, Cl. 426-430.000.

Weber, Eugen, to Obisphere Corporation Wilmington, Succursale de Collonge-Bellerive. Keyboard. 4,339,634, Cl. 200-5.00A.

Weber, Kurt: *See—*
Luthi, Christian; Meyer, Hans R.; and Weber, Kurt, 4,339,393, Cl. 260-459.00A.

Weber, Wilhelm: *See—*
Frisch, David C.; and Weber, Wilhelm, 4,339,303, Cl. 156-629.000.

Webing, Kurt: *See—*
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Wehner, Wolfgang; Michaelis, Klaus-Peter; and Schneider, Rainer, to Ciba-Geigy Corporation. Imide containing stabilizers for chlorinated thermoplastics. 4,339,383, Cl. 548-419.000.

Weidenmuller, Hans-Ludwig: *See—*
Oeding, Volker; Pfaff, Werner; Vertesy, Laszlo; and Weidenmuller, Hans-Ludwig, 4,339,436, Cl. 424-115.000.

Weidman, Marilyn V. Floor stand mounted mirror. 4,339,104, Cl. 248-407.000.

Weigt, Gerald I. Mobile and adaptable wheel chair. 4,339,013, Cl. 180-6.500.

Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and olefin surface layer blend of polybutene-1 and an ethylene or a propylene copolymer. 4,339,493, Cl. 428-349.000.

Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and olefin surface layer blend of polybutene-1 and an ethylene or a propylene copolymer. 4,339,494, Cl. 428-349.000.

Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and olefin surface layer blend of polybutene-1 and ethylene or a propylene copolymer. 4,339,495, Cl. 428-349.000.

Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of ethylene copolymer and propylene copolymer. 4,339,496, Cl. 428-349.000.

Weiner, Milton L., to Mobil Oil Corporation. Heat sealable packaging film comprising propylene polymer substrate and a surface layer blend of olefin copolymer or interpolymer. 4,339,497, Cl. 428-349.000.

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Weir, Fred E.: *See—*
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Weiss, Donald P.: *See—*
White, Robert D.; and Weiss, Donald P., 4,339,788, Cl. 362-157.000.

Weiss, Jacob B. Eavestrough corner bracket. 4,338,808, Cl. 72-379.000.

Weiss, Peter: *See—*
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Weiss, Richard: *See—*
Tappe, Gunther; Gasper, Bertram; Laubenberger, Herbert; and Weiss, Richard, 4,339,499, Cl. 428-373.000.

Weissgerber, Rudolf: *See—*
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Weist, William T.: *See—*
Scott, William R.; Bloomfield, Philip; Weist, William T.; and McMahon, Karen M., 4,339,683, Cl. 310-364.000.

Weisz, Paul B.; and Frilette, Vincent J., to Mobil Oil Corporation. Conversion process. 4,339,353, Cl. 252-455.00Z.

Welch, Elmer S., to Superior Stainless, Inc. Clean in place diaphragm valve. 4,339,111, Cl. 251-331.000.

Welkers, Knut: *See*—
Thievessen, Karl; Weiss, Peter; and Welkers, Knut, 4,339,094, Cl. 242-68.200.

Wells, Jerry S.: *See*—
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Welters, Norbert, to Palitex Project Company GmbH. Yarn brake. 4,338,774, Cl. 57-58.860.

Welton, Myron L.; and Sheneman, Gary L., to Iowa Beef Processors, Inc. Method for processing beef tongues. 4,338,704, Cl. 17-50.000.

Wendt, Robert J. Apparatus for dispensing material from a containment vessel in preselected measured amounts. 4,339,058, Cl. 222-309.000.

Werle, Peter; Merk, Wolfgang; Pohl, Gerhard; and Hoevels, Friedhelm, to Degussa Aktiengesellschaft. Bisguanamines. 4,339,578, Cl. 544-207.000.

Wesson, John P.: *See*—
Totten, George E.; Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,339,581, Cl. 546-14.000.

Westermann, Hans: *See*—
Muschelknautz, Edgar; Vogelsgesang, Roland; Ohse, Helmut; Westermann, Hans; Moller, Eckhard; Hachmann, Klaus; Schiemann, Wilhelm; and Kesper, Bernt, 4,339,570, Cl. 528-272.000.

Western Electric Co., Inc.: *See*—
Gursky, Michael T.; and Pcihoda, William W., 4,339,296, Cl. 156-345.000.
Kanotz, William M.; Mottine, John J., Jr.; Staats-Westover, Robert F.; and Wilson, Max K., 4,339,298, Cl. 156-498.000.

Westinghouse Electric Corp.: *See*—
Franz, James H., 4,339,697, Cl. 318-341.000.
Husby, Donald E.; Ewing, Jerry L.; and Johnson, William H., 4,339,789, Cl. 362-259.000.
Zwillich, Alexander; and Patel, Jayant M., 4,339,635, Cl. 200-48.00R.

Westphal, Jochen: *See*—
Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schundehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.

Whelchel, Charles J.: *See*—
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Whirlpool Corporation: *See*—
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White, Robert D.; and Weiss, Donald P., to Union Carbide Corporation. Lighting device with dynamic bulb position. 4,339,788, Cl. 362-157.000.

Whittingham, M. Stanley: *See*—
Jacobson, Allan J.; Cheng, Kent H.; and Whittingham, M. Stanley, 4,339,424, Cl. 423-606.000.

Whyte, David D., to Procter & Gamble Company, The. Heavily perfumed particles. 4,339,356, Cl. 252-522.00A.

Widmer, Fred: *See*—
Johansen, Jack T.; and Widmer, Fred, 4,339,534, Cl. 435-70.000.

Wieder, Armin W.: *See*—
Horng, Cheng T.; Konian, Richard R.; Schwenker, Robert O.; and Wieder, Armin W., 4,339,767, Cl. 357-44.000.

Wiessner, Edward E.: *See*—
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Wiggins, Wayne T.: *See*—
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Wigmore, Richard: *See*—
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Wiklund, Rudolf; and Nordstrom, Lennart, to Pharos AB. Method and apparatus for registration of topography. 4,339,664, Cl. 250-577.000.

Wilder, Gene R., to Monsanto Company. 2-(Thioamino)-4,6-diamino-1,3,5-triazines. 4,339,577, Cl. 544-197.000.

Wilhelm, Siegfried: *See*—
Hummel, Wolfgang; Koch, Gerhard; Wilhelm, Siegfried; and Zorn, Horst, 4,338,771, Cl. 56-294.000.

Wilkins, Douglas A.: *See*—
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Will, Peter: *See*—
Bauder, Richard; and Will, Peter, 4,338,898, Cl. 123-279.000.

Willard, Robert S.: *See*—
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Wm. E. Wright Co.: *See*—
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Williams, Derek, to Lucas Industries Limited. Drive cam and follower for a liquid fuel injection pumping apparatus. 4,339,234, Cl. 417-490.000.

Williams, Frederick C.; and Clements, William W., to Hughes Aircraft Company. Synthetic array processor. 4,339,752, Cl. 343-5.0CM.

Williams, R. Tudor. Airway intubator. 4,338,930, Cl. 128-200.260.

Williams, Robert M. Reversible material reducing mill. 4,339,085, Cl. 241-62.000.

Williams, Terrell M., to Medtronic, Inc. Positive fixation heart wire. 4,338,947, Cl. 128-642.000.

Williams, Thomas C.: *See*—
Totten, George E.; Wesson, John P.; Williams, Thomas C.; and Eagar, Robert G., Jr., 4,339,581, Cl. 546-14.000.

Williamson, Roger J.: *See*—
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Willis, Brian J.; Lerner, David I.; and Barton, Derek H. R., to Fritzsche Dodge & Olcott Inc. Process for the manufacture of 3,6-dialkyl resorcylic acid esters. 4,339,593, Cl. 560-70.000.

Wilson, Dennis A. Shaker conveyor and drive mechanism therefor. 4,339,029, Cl. 198-750.000.

Wilson, Elmer C. Syringe support. 4,338,935, Cl. 128-218.00R.

Wilson, James R.: *See*—
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Wilson, Max K.: *See*—
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Wilson, William W.: *See*—
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Windle, William; Lofthouse, Charles H.; and Shergold, Howard L., to English Clays Lovering Pochin & Company, Ltd. Treatment of minerals. 4,339,042, Cl. 209-5.000.

Windmoller & Holscher: *See*—
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Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,339,404, Cl. 264-40.100.

Wingard, Robert E., Jr.: *See*—
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Winkler, Gerhard: *See*—
Upmeier, Hartmut; Klinge, Gerd; and Winkler, Gerhard, 4,339,403, Cl. 264-40.100.
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Winter, William E.: *See*—
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Winters, David L. Filter paper dispenser. 4,339,057, Cl. 221-213.000.

Winzer, Gerhard, to Siemens Aktiengesellschaft. Optical device for frequency-selective distributing light and the process of producing the device. 4,339,170, Cl. 350-96.160.

Winzer, Gerhard; Reichelt, Achim; and Michel, Herbert, to Siemens Aktiengesellschaft. Process for manufacturing a branch element. 4,339,290, Cl. 156-159.000.

Wise, Eugene H., to Atari, Inc. Dual floppy disc machine. 4,339,778, Cl. 360-99.000.

Wise, Stephen A., to Allen Organ Co. Asynchronous interface for electronic musical instrument with multiplexed note selection. 4,338,843, Cl. 84-1.010.

Wiseman, Donald H. Ladder support. 4,339,020, Cl. 182-214.000.

Witherspoon, Romeo R.; and Meibuhr, Stuart G., to General Motors Corporation. Battery having electrode with hydrophilic polymer binder. 4,339,512, Cl. 429-206.000.

Witschi, Heinz; and Fankhauser, Peter. Device for connecting a structure with a wall to be poured with concrete. 4,338,757, Cl. 52-699.000.

Witt, Eugene F., to Bell Telephone Laboratories, Incorporated. Clamp for securing large can-type capacitors to a circuit chassis. 4,339,105, Cl. 248-500.000.

Witt, Frank H., Jr., to Levine, Rosalie S.; Bisacca, Mildred S.; and GRRN Company. Convenience flask. 4,339,062, Cl. 224-148.000.

Witzel, Bruce E.: *See*—
Grier, Nathaniel; Harris, Elbert E.; Joshua, Henry; Patchett, Arthur A.; Witzel, Bruce E.; and Dybas, Richard A., 4,339,453, Cl. 424-251.000.

Wixon, Harold E., to Colgate Palmolive Co. Free flowing high bulk density particulate detergent-softener. 4,339,335, Cl. 252-8.800.

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Hugl, Herbert; Wolfrum, Gerhard; Mennicke, Winfried; Schundehutte, Karl H.; and Westphal, Jochen, 4,339,380, Cl. 260-207.100.

Wollin, Roger W., to Fiberdome Incorporated. Dust-tight silo discharge pipe assembly. 4,339,024, Cl. 193-34.000.

Wood, Prentice J., to Mead Corporation, The. Bottle carrier with peripheral skirt. 4,339,032, Cl. 206-158.000.

Woods, David C., to Burlington Industries, Inc. Panelling edging. 4,338,754, Cl. 52-393.000.

Woods, Donald C., to Del Mar Avionics. Validator for electrocardial data processing system. 4,339,800, Cl. 364-417.000.

Wovcha, Merle G.; Biggs, Candice B.; and Pyke, Thomas R., to Upjohn Company, The. Biologically pure culture of mutant mycobacterium. 4,339,539, Cl. 435-253.000.

Wright, Brian J.: *See*—
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Wright, James M., to Boeing Company, The. Passive-type range determining system using scanning receiving devices. 4,339,755, Cl. 343-112.00D.

Wright, John T. Brake adjuster tool. 4,338,711, Cl. 29-251.000.

Wright, Kenneth: *See*—
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Wu, Anthony W.: *See*—
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Wurmli, Arthur, to Rieter Machine Works Limited. Inner ring for spinning ring. 4,338,775, Cl. 57-119.000.

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Wust, Willi; Leischner, Hasso; Rahse, Wilfried; Carduck, Franz-Josef; and Kuhne, Norbert, to Henkel Kommanditgesellschaft auf Aktien. Preparation of cellulose derivatives using highly reactive alkali cellulose. 4,339,573, Cl. 536-84.000.
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Wyandotte Paint Products Company: *See—*
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Wyllie, Kenneth I.: *See—*
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Yakan, Koji: *See—*
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Yamada, Shoichi, to Toyo Tokushu Kiki Co., Ltd. Abnormal condition sensing monitor system for use with machine tools. 4,339,749, Cl. 340-680.000.
Yamada, Yu; Inoue, Mutsuhiro; Arai, Toshio; Omi, Kokichi; Suzuki, Hiroaki; and Kuwayama, Tetsuro, to Canon Kabushiki Kaisha. Film reader. 4,339,183, Cl. 353-78.000.
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Yamaguchi, Hisao; and Fujisawa, Kazuo, to Sumitomo Metal Industries, Ltd. Method and apparatus for non-contact ultrasonic flaw detection. 4,338,822, Cl. 73-643.000.
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Yamamura, Masaaki; Igarashi, Taizo; and Ukigai, Toshiyuki, to Kao Soap Co., Ltd.; Lion Corporation; Nippon Oil Company, Limited; and Fats Co., Ltd. Mixed fuel composition. 4,339,246, Cl. 44-51.000.
Yamanaka, Haruyoshi; and Kazumura, Masaru, to Matsushita Electric Industrial Co., Ltd. Apparatus for making semiconductor devices. 4,338,877, Cl. 118-421.000.
Yamanaka, Haruyoshi; and Kazumura, Masaru, to Matsushita Electric Industrial Co., Ltd. Light emitting diode and method of making the same. 4,339,689, Cl. 313-499.000.
Yamanaka, Hideyasu: *See—*
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Yamazaki, Kazuo: *See—*
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Yamazaki, Keiji, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm control and mirror release devices for cameras. 4,339,186, Cl. 354-38.000.
Yamazaki, Noboru; Nakahama, Seiichi; and Yamaguchi, Kazuo, to Japan Synthetic Rubber Company, Limited. Cyclic sulfur compounds. 4,339,590, Cl. 549-11.000.
Yanagihara, Yuzo; Noguchi, Kohji; Suzuki, Hiroshi; and Honda, Makoto, to Asahi Kasei Kogyo Kabushiki Kaisha. Hydrophilic packing material for chromatography. 4,339,500, Cl. 428-402.000.
Yasuda, Makoto; Murayama, Seiichi; and Ito, Masaru, to Hitachi, Ltd. Temperature control system for an element analyzer. 4,339,201, Cl. 356-312.000.
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Yasumura, Masayuki; and Ishigaki, Yoshio. Voltage regulator using saturable transformer. 4,339,792, Cl. 363-75.000.
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Yee, Henry C., to Bendix Corporation, The. Pulse width discriminator. 4,339,723, Cl. 328-111.000.
Yokokawa, Hiroshi: *See—*
Tsuda, Munetaka; Yokokawa, Hiroshi; and Utsumi, Yoshiharu, 4,339,717, Cl. 324-313.000.
Yokoyama, Kenji, to Nippon Gakki Seizo Kabushiki Kaisha. Amplifier with power supply switching. 4,339,730, Cl. 330-297.000.
Yokoyama, Nobuo; and Kawabata, Nobuaki, to Nippon Oil Company, Limited. Wax emulsion. 4,339,276, Cl. 106-271.000.
Yoshida, Ikio: *See—*
Kage, Kouzou; and Yoshida, Ikio, 4,339,727, Cl. 329-106.000.
Yoshida Kogyo K.K.: *See—*
Aoki, Tsunetaka, 4,338,706, Cl. 24-70.00R.
Matsuda, Yoshio, 4,338,800, Cl. 66-194.000.
Yoshida, Kunio. Electronic dictionary and language interpreter with faculties of examining a full-length word based on a partial word entered and of displaying the total word and a translation corresponding thereto. 4,339,806, Cl. 364-900.000.
Yoshida, Takao, to International Flavors & Fragrances Inc. Flavoring with methyl substituted oxobicyclo-4,4,0-decane derivatives. 4,339,467, Cl. 426-538.000.
Yoshida, Yoji: *See—*
Itoh, Shuji; and Yoshida, Yoji, 4,339,292, Cl. 156-206.000.
Yoshida, Yoshiaki: *See—*
Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, 4,338,777, Cl. 57-263.000.
Yoshikuni, Yoshiaki: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Ezure, Yoji; Yoshikuni, Yoshiaki; and Yagi, Masahiro, 4,339,585, Cl. 546-242.000.
Yoshimura, Tastushiro; and Terada, Tsutomu, to Daikin Kogyo Co., Ltd. Water-based fluoroelastomer coating composition. 4,339,553, Cl. 524-544.000.
Yoshinaga, Shoji: *See—*
Fujiwara, Kiyoshi; Nagatomo, Katsuaki; Shibata, Fumio; Nomura, Shoji; and Yoshinaga, Shoji, 4,339,330, Cl. 208-251.00R.
Yoshino, Isamu; Takahashi, Yasohachi; and Fujii, Osamu, to Mishima Paper Co., Ltd.; and Naigai Ink. Mgf. Co., Ltd., part interest to each. Pressure-sensitive recording material. 4,339,143, Cl. 282-27.500.
Yoshioka, Mitsuko: *See—*
Masaki, Mitsuo; Yamanaka, Toru; Yoshioka, Mitsuko; and Okai, Kazuki, 4,339,379, Cl. 260-112.50R.
Yoshioka, Naonori; Tada, Hisashi; and Kashiyama, Setsuo, to Mitsubishi Rayon Company, Limited. Fiber reinforced plastic sheet molding compound. 4,339,490, Cl. 428-213.000.
Yoshizawa, Toshio: *See—*
Suzuki, Osamu; Yoshizawa, Toshio; Yoshida, Yoshiaki; Onoue, Keiji; and Seiki, Kazuo, 4,338,777, Cl. 57-263.000.
Yotuyanagi, Masahiko: *See—*
Hirose, Masahiko; Yasui, Tsuyoshi; and Yotuyanagi, Masahiko, 4,339,326, Cl. 204-298.000.
Young, Albert C.: *See—*
Bailey, Cecil; Young, Albert C.; and Thold, Dezso D., 4,339,652, Cl. 219-95.000.
Young, Ian R., to Picker International Limited. Nuclear magnetic resonance systems. 4,339,716, Cl. 324-309.000.
Yu, Henry H. S.; and Teague, Richard K., to Bahnson Company, The. Supersonic jet ionizer. 4,339,782, Cl. 361-229.000.
Yuen, Sing C. J.: *See—*
Tsui, Kwok W.; and Yuen, Sing C. J., 4,338,741, Cl. 46-14.000.
Yumoto, Satoshi: *See—*
Shimamoto, Noboru; and Yumoto, Satoshi, 4,339,486, Cl. 428-40.000.
Zambrow, John L.: *See—*
Krueger, Robert H.; Zambrow, John L.; and Cheadle, Brian E., 4,338,997, Cl. 165-134.00R.
Zehntel, Inc.: *See—*
Jacobson, Robert G., 4,339,819, Cl. 371-16.000.
Zeiger, Aaron: *See—*
Jassby, Kenneth; and Zeiger, Aaron, 4,338,820, Cl. 73-597.000.
Zellweger, Ltd.: *See—*
Brassel, Peter; and Zingg, Rudolf, 4,338,824, Cl. 73-828.000.
Zenith Radio Corporation: *See—*
Eilers, Carl; and Fockens, Pieter, 4,339,772, Cl. 358-144.000.
Zenitz, Bernard L., to Sterling Drug Inc. Anti-asthmatic, anti-allergic, anti-cholinergic, bronchodilator and anti-inflammatory 1-[(benzoylphenyl)-lower-alkyl]piperidines and analogs thereof. 4,339,576, Cl. 544-130.000.
Ziaylek, Theodore, Jr. Carrier clamp for fire ladders. 4,339,064, Cl. 224-324.000.
Zieg, Clifford V., to Kaiser Aerospace & Electronics Corporation. Self-aligning valve assembly. 4,338,689, Cl. 4-378.000.
Ziegenfus, Barry L., to SI Handling Systems, Inc. Assembly line driverless vehicle. 4,338,864, Cl. 104-121.000.
Zika, Harry T.: *See—*
Decker, Quintin W.; Marcus, Erich; and Zika, Harry T., 4,339,236, Cl. 8-137.000.
Zingg, Rudolf: *See—*
Brassel, Peter; and Zingg, Rudolf, 4,338,824, Cl. 73-828.000.
Zink, Frederick J.: *See—*
Amlani, Kish; Zink, Frederick J.; Morgan, Craig; and Ellwood, Thomas, 4,338,825, Cl. 73-862.650.
Zorn, Horst: *See—*
Hummel, Wolfgang; Koch, Gerhard; Wilhelm, Siegfried; and Zorn, Horst, 4,338,771, Cl. 56-294.000.
Zweig, Arnold: *See—*
Raghu, Sivaraman; and Zweig, Arnold, 4,339,603, Cl. 564-302.000.
Zwiener, Rudolf: *See—*
Lucian, Anton; and Zwiener, Rudolf, 4,338,971, Cl. 139-194.000.
Zwillich, Alexander; and Patel, Jayant M., to Westinghouse Electric Corp. Isolated phase bus disconnect switch with grounded operating mechanism. 4,339,635, Cl. 200-48.00R.
3U Partners: *See—*
Underwood, Gene E., 4,339,406, Cl. 264-154.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF JULY, 1982

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bertanza, Battista, to Riva Calzoni S.p.A. Control units for vehicle powersteering mechanisms. Re. 30,992, Cl. 60-384.000.

Column Corporation: *See*—
Hopp, Leo A., Re. 30,993, Cl. 239-341.000.

Dunham-Bush, Inc.: *See*—
Shaw, David N., Re. 30,994, Cl. 417-366.000.

General Electric Company: *See*—
Rairden, John R., III, Re. 30,995, Cl. 428-680.000.

Hopp, Leo A., to Column Corporation. General purpose compression-type sprayer. Re. 30,993, Cl. 239-341.000.

Rairden, John R., III, to General Electric Company. High integrity CoCrAl(Y) coated nickel-base superalloys. Re. 30,995, Cl. 428-680.000.

Riva Calzoni S.p.A.: *See*—
Bertanza, Battista, Re. 30,992, Cl. 60-384.000.

Shaw, David N., to Dunham-Bush, Inc. Vertical axis hermetic rotary helical screw compressor with improved rotary bearings and oil management. Re. 30,994, Cl. 417-366.000.

LIST OF DESIGN PATENTEES

Abraham, William W.; and Majka, Edward H., to Consolidated Medical Equipment Inc. I.V. Bandage. 265,423, 7-13-82, Cl. D24-52.000.

Addington, William F. Threadless instant release bicycle tire pump connector. 265,380, 7-13-82, Cl. D8-395.000.

Aktiebolaget Ramlosa Halsobrunn: *See*—
Jonsson, Gunnar V., 265,382, Cl. D9-349.000.

Alvarez, Arthur. Log handling device. 265,375, 7-13-82, Cl. D7-209.000.

Avento Designs, Inc.: *See*—
DiPersia, James, 265,363, Cl. D6-177.000.

Baney, George J. Golf bag cart. 265,392, 7-13-82, Cl. D34-15.000.

Beatrice Foods Co.: *See*—
Chow, Ho; and Beaver, David L., 265,418, Cl. D23-43.000.

Beaver, David L.: *See*—
Chow, Ho; and Beaver, David L., 265,418, Cl. D23-43.000.

Beck, Leonard W. Combined raisable rear deck panel, window and roof for an automobile. 265,397, 7-13-82, Cl. D12-156.000.

Bell Telephone Laboratories, Incorporated: *See*—
Genaro, Donald M.; and McGarvey, John N., 265,401, Cl. D14-60.000.

Bergenwall, Henning. Invalid bed or the like. 265,357, 7-13-82, Cl. D6-83.000.

Berlic, France. Chair. 265,356, 7-13-82, Cl. D6-78.000.

Bighaus, Mike J. Game table for cue-driven balls. 265,415, 7-13-82, Cl. D21-232.000.

Borja, Jesus, to Illinois Tool Works Inc. Universal wire clip. 265,381, 7-13-82, Cl. D8-395.000.

Braasch, Ronald W., to H&B Incentive Marketing. Covered foam disk for amusement purposes. 265,409, 7-13-82, Cl. D21-100.000.

Breyer, Brigitte. Hanging ornament. 265,386, 7-13-82, Cl. D11-125.000.

Bunsmaster Bakeries of America Inc.: *See*—
Vona, Romanino, 265,361, Cl. D6-130.000.

Chauviere, E. Davis: *See*—
Kennedy, Patrick J.; and Chauviere, E. Davis, 265,424, Cl. D25-25.000.

Chow, Ho; and Beaver, David L., to Beatrice Foods Co. Hose coupling. 265,418, 7-13-82, Cl. D23-43.000.

Christensen, Grover N. Combined measuring and dispensing container for granulated or powdered material. 265,373, 7-13-82, Cl. D7-47.000.

Christian, Hubert E.: *See*—
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 265,372, Cl. D7-6.000.

Chung Mei Metal and Plastic Factory Ltd.: *See*—
Mann, Kittson, 265,427, Cl. D26-44.000.

Coats & Clark, Inc.: *See*—
Einhorn, Ruediger, 265,379, Cl. D8-367.000.

Consolidated Medical Equipment Inc.: *See*—
Abraham, William W.; and Majka, Edward H., 265,423, Cl. D24-52.000.

Cooper Laboratories, Inc.: *See*—
Hyman, Richard M., 265,353, Cl. D4-25.000.
Hyman, Richard M., 265,354, Cl. D4-25.000.

CPG Products Corp.: *See*—
Ottinger, Timothy, 265,410, Cl. D21-122.000.

Craver, Richard D., to Orrville Products, Inc. Stove. 265,420, 7-13-82, Cl. D23-97.000.

Dart Industries Inc.: *See*—
Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., 265,372, Cl. D7-6.000.

Davis, Ronald H. Frame for a face guard. 265,350, 7-13-82, Cl. D2-233.000.

Dearing, Le Roy M., to L. M. Dearing Associates. Mobile support for swimming pool cover reels. 265,391, 7-13-82, Cl. D34-18.000.

Desnick, Shirley G. Soap container. 265,432, 7-13-82, Cl. D28-63.000.

DiPersia, James, to Avento Designs, Inc. Table or similar article. 265,363, 7-13-82, Cl. D6-177.000.

Duggan, James E. Combined paper towel holder and shelf. 265,360, 7-13-82, Cl. D6-91.000.

Eickmeyer, Robert W., to Estee Lauder Inc. Lamp. 265,428, 7-13-82, Cl. D26-63.000.

Einhorn, Ruediger, to Coats & Clark, Inc. Hook. 265,379, 7-13-82, Cl. D8-367.000.

Entex Industries, Inc.: *See*—
Hanzawa, Tsuneo, 265,407, Cl. D21-13.000.

Ericson, John L. Game board. 265,408, 7-13-82, Cl. D21-20.000.

Estee Lauder Inc.: *See*—
Eickmeyer, Robert W., 265,428, Cl. D26-63.000.

Feldman, Fred. Loud speaker cabinet. 265,399, 7-13-82, Cl. D14-33.000.

Feldman, Fred. Loud speaker cabinet. 265,400, 7-13-82, Cl. D14-33.000.

Feuchs, Walter F. Building structure. 265,426, 7-13-82, Cl. D25-18.000.

Flint Tool & Machine Co.: *See*—
Roby, Stephen G., 265,378, Cl. D8-74.000.

Fradkoff, Alex. Cigarette lighter. 265,430, 7-13-82, Cl. D27-36.000.

Fukushima, Hisao; Yamauchi, Kimpei; and Hirooka, Junji, to Oki Electric Industry Co. Ltd. Transceiver for a car telephone set. 265,402, 7-13-82, Cl. D14-68.000.

Gagner, Lawrence J. Etagere or the like. 265,365, 7-13-82, Cl. D6-186.000.

Gagner, Lawrence J. Etagere or the like. 265,366, 7-13-82, Cl. D6-186.000.

Gagner, Lawrence J. Etagere or the like. 265,367, 7-13-82, Cl. D6-186.000.

Gagner, Lawrence J. Etagere or the like. 265,368, 7-13-82, Cl. D6-186.000.

Gagner, Lawrence J. Etagere or the like. 265,369, 7-13-82, Cl. D6-186.000.

Gagner, Lawrence J. Etagere or the like. 265,370, 7-13-82, Cl. D6-186.000.

Gagner, Lawrence J. Etagere or the like. 265,371, 7-13-82, Cl. D6-186.000.

Gant, Bennie K. Stove. 265,419, 7-13-82, Cl. D23-97.000.

Genaro, Donald M.; and McGarvey, John N., to Bell Telephone Laboratories, Incorporated. Telephone stand. 265,401, 7-13-82, Cl. D14-60.000.

Gewelber, Ytzhak, to Lockhart Industries, Inc. Motorcycle by-pass oil cooler. 265,403, 7-13-82, Cl. D15-5.000.

Graas, Stig, to Graas, Stig. Collapsible mobile work platform having telescopic legs. 265,425, 7-13-82, Cl. D25-66.000.

Groenewold, Van D.; Christian, Hubert E.; and Schwartz, James P., to Dart Industries Inc. Embossed beverage or packaging cup. 265,372, 7-13-82, Cl. D7-6.000.

H&B Incentive Marketing: *See*—
Braasch, Ronald W., 265,409, Cl. D21-100.000.

Hamilton, Bert, Jr., to Jet-It-Done, Inc. Outdoor cooker. 265,374, 7-13-82, Cl. D7-108.000.

Hanzawa, Tsuneo, to Entex Industries, Inc. Hand-held electronic football game housing or the like. 265,407, 7-13-82, Cl. D21-13.000.

Harrison, Christopher R. B.; and Pittaway, Alan K., to Wilkinson Sword Limited. Pruner. 265,376, 7-13-82, Cl. D8-5.000.

Hedenblad, Robert; and Jonsson, Nils I. Exercise board. 265,411, 7-13-82, Cl. D21-191.000.

Helior S.A.: *See—*
Rodier, Pierre, 265,385, Cl. D11-106.000.
Hirooka, Junji: *See—*
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Hoshino, Kunio: *See—*
Ohta, Kikuo; Mishiro, Benito; and Hoshino, Kunio, 265,398, Cl. D14-5.000.
Howe, Betty T. Multicompartment ice bag with attaching means. 265,422, 7-13-82, Cl. D24-43.000.
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,393, 7-13-82, Cl. D12-146.000.
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,394, 7-13-82, Cl. D12-147.000.
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,395, 7-13-82, Cl. D12-147.000.
Hutz, John A., to Uniroyal, Inc. Pneumatic tire tread and buttress. 265,396, 7-13-82, Cl. D12-147.000.
Hyman, Richard M., to Cooper Laboratories, Inc. Toothbrush. 265,353, 7-13-82, Cl. D4-25.000.
Hyman, Richard M., to Cooper Laboratories, Inc. Toothbrush. 265,354, 7-13-82, Cl. D4-25.000.
Illinois Tool Works Inc.: *See—*
Borja. Jesus, 265,381, Cl. D8-395.000.
Jack Malven Corporation: *See—*
Malven, John H., 265,359, Cl. D6-85.000.
Jackson, Douglas J. Insect storing toy. 265,416, 7-13-82, Cl. D22-19.000.
Jet-It-Done, Inc.: *See—*
Hamilton, Bert, Jr., 265,374, Cl. D7-108.000.
Jonsson, Gunnar V., to Aktiebolaget Ramlosa Halsobrunn. Bottle. 265,382, 7-13-82, Cl. D9-349.000.
Jonsson, Nils I.: *See—*
Hedenblad, Robert; and Jonsson, Nils I., 265,411, Cl. D21-191.000.
Kay, Andrew F. Digital multimeter. 265,384, 7-13-82, Cl. D10-75.000.
Keck, Emma Jane: *See—*
Tender, Thomas S., 265,404, Cl. D17-9.000.
Kennedy, Patrick J.; and Chauviere, E. Davis, to River Hotel Company. Building. 265,424, 7-13-82, Cl. D25-25.000.
Koenig, Robert B. Dog hurdle. 265,433, 7-13-82, Cl. D30-42.000.
Koskinen, Kauno L. J. Tube expander tool. 265,377, 7-13-82, Cl. D8-14.000.
L. M. Dearing Associates: *See—*
Dearing, Le Roy M., 265,391, Cl. D34-18.000.
Lane, Edward C. Target for a game. 265,406, 7-13-82, Cl. D21-6.000.
Lane, Mason. Guitar. 265,405, 7-13-82, Cl. D17-14.000.
Lockhart Industries, Inc.: *See—*
Gewelber, Ytzhak, 265,403, Cl. D15-5.000.
M & M Luggage Co., Inc.: *See—*
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Majka, Edward H.: *See—*
Abraham, William W.; and Majka, Edward H., 265,423, Cl. D24-52.000.
Malven, John H., to Jack Malven Corporation. Display stand. 265,359, 7-13-82, Cl. D6-85.000.
Mann, Kittson, to Chung Mei Metal and Plastic Factory Ltd. Battery operated lantern. 265,427, 7-13-82, Cl. D26-44.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Ohta, Kikuo; Mishiro, Benito; and Hoshino, Kunio, 265,398, Cl. D14-5.000.
McGarvey, John N.: *See—*
Genaro, Donald M.; and McGarvey, John N., 265,401, Cl. D14-60.000.
Miles, George S. Lampshade. 265,429, 7-13-82, Cl. D26-118.000.
Millikan, William B. Tennis rebound board. 265,413, 7-13-82, Cl. D21-199.000.
Mishiro, Benito: *See—*
Ohta, Kikuo; Mishiro, Benito; and Hoshino, Kunio, 265,398, Cl. D14-5.000.
Moore, Lonny J.; and Tague, Lincoln P., to Teledyne Densco, Division of Teledyne Industries, Inc. Spatula attachment for a dental tool. 265,421, 7-13-82, Cl. D24-10.000.
Narda Microwave Corporation, The: *See—*
Perry, Gordon R., 265,383, Cl. D10-47.000.
Nattrass, Ray A. Plant box. 265,387, 7-13-82, Cl. D11-156.000.
Nissen Corporation: *See—*
Summerlot, Raymond L., 265,412, Cl. D21-192.000.
Ohta, Kikuo; Mishiro, Benito; and Hoshino, Kunio, to Matsushita Electric Industrial Co., Ltd. Combined tuner and tape deck. 265,398, 7-13-82, Cl. D14-5.000.
Oki Electric Industry Co. Ltd.: *See—*
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Ornatek, Larry B. Pennant. 265,388, 7-13-82, Cl. D11-166.000.
Ornatek, Larry B. Pennant. 265,389, 7-13-82, Cl. D11-166.000.
Orrville Products, Inc.: *See—*
Craver, Richard D., 265,420, Cl. D23-97.000.
Ottinger, Timothy, to CPG Products Corp. Toy food processor base. 265,410, 7-13-82, Cl. D21-122.000.
Perry, Gordon R., to Narda Microwave Corporation, The. Consumer radiation monitor. 265,383, 7-13-82, Cl. D10-47.000.
Phillips, Marie S. Wood storing cart. 265,434, 7-13-82, Cl. D34-18.000.
Pinnacle Furniture Company, Inc.: *See—*
Wistehuff, Daniel D., 265,355, Cl. D6-71.000.
Wistehuff, Daniel D., 265,362, Cl. D6-153.000.
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Rekow, John A. Apparel display rack. 265,358, 7-13-82, Cl. D6-85.000.
Riggs, Dennis D.; and Seach, Daniel J. Roller skate base plate. 265,414, 7-13-82, Cl. D21-226.000.
River Hotel Company: *See—*
Kennedy, Patrick J.; and Chauviere, E. Davis, 265,424, Cl. D25-25.000.
Roby, Stephen G., to Flint Tool & Machine Co. Vise stop. 265,378, 7-13-82, Cl. D8-74.000.
Rodier, Pierre, to Helior S.A. Medal. 265,385, 7-13-82, Cl. D11-106.000.
Schwartz, James P.: *See—*
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Riggs, Dennis D.; and Seach, Daniel J., 265,414, Cl. D21-226.000.
Selby, William. Fish lure. 265,417, 7-13-82, Cl. D22-29.000.
Stark, Ted, to M & M Luggage Co., Inc. Luggage. 265,352, 7-13-82, Cl. D3-71.000.
Summerlot, Raymond L., to Nissen Corporation. Exercise treadmill. 265,412, 7-13-82, Cl. D21-192.000.
Tague, Lincoln P.: *See—*
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Tender, Thomas S., to Tender, Thomas S.; and Keck, Emma Jane. Ornament for an organ or the like. 265,404, 7-13-82, Cl. D17-9.000.
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U.S. Philips Corporation: *See—*
Yran, Knut O., 265,431, Cl. D28-50.000.
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W. L. Ross Enterprises, Inc.: *See—*
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Walker, Calvin. Newspaper stand. 265,364, 7-13-82, Cl. D6-184.000.
Wilkinson Sword Limited: *See—*
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Wistehuff, Daniel D., to Pinnacle Furniture Company, Inc. Seat. 265,355, 7-13-82, Cl. D6-71.000.
Wistehuff, Daniel D., to Pinnacle Furniture Company, Inc. Bookcase. 265,362, 7-13-82, Cl. D6-153.000.
Wooters, Dwight N., to W. L. Ross Enterprises, Inc. Cup holder for an automobile door. 265,351, 7-13-82, Cl. D3-40.000.
Yamaha Motor Corporation, U.S.A.: *See—*
Yoshida, Keisuke, 265,390, Cl. D12-7.000.
Yamauchi, Kimpei: *See—*
Fukushima, Hisao; Yamauchi, Kimpei; and Hirooka, Junji, 265,402, Cl. D14-68.000.
Yoshida, Keisuke, to Yamaha Motor Corporation, U.S.A. Combined snowmobile luggage carrier and backrest. 265,390, 7-13-82, Cl. D12-7.000.
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Armstrong, David L., to Armstrong Nurseries, Inc. Freestone peach. 4,865, 7-13-82, Cl. 42.000.
Armstrong Nurseries, Inc.: *See—*
Armstrong, David L., 4,865, Cl. 42.000.
Guymon, Charlene S., executrix: *See—*
Olmo, Harold P.; and Guymon, James F., deceased, 4,866, Cl. 47.000.
Guymon, James F., deceased: *See—*
Olmo, Harold P.; and Guymon, James F., deceased, 4,866, Cl. 47.000.
Olmo, Harold P.; and Guymon, James F., deceased (by Guymon, Charlene S., executrix), to University of California, The Regents of the. Variety of grapevine. 4,866, 7-13-82, Cl. 47.000.
University of California, The Regents of the: *See—*
Olmo, Harold P.; and Guymon, James F., deceased, 4,866, Cl. 47.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 13, 1982

NOTE.—First number, class; second number, subclass; third number, patent number

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93 4,338,686

CLASS 3

13 4,338,687

CLASS 4

191 4,338,688
300 4,338,690
378 4,338,689
562 4,338,691

CLASS 5

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CLASS 8

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137 4,339,236
405 4,339,237
527 4,339,238
561 4,339,239

CLASS 10

72 R 4,338,694

CLASS 12

10.1 4,338,695
54.3 4,338,696

CLASS 15

1.7 4,338,697
230.16 4,338,698

CLASS 16

237 4,338,699

CLASS 17

1 E 4,338,700
25 4,338,701
32 4,338,702
44 4,338,703
50 4,338,704

CLASS 19

80 R 4,338,705

CLASS 23

230 B 4,339,241
4,339,242
4,339,243
230 R 4,339,240
293 A 4,339,244

CLASS 24

70 R 4,338,706
257 4,338,707

CLASS 29

25.13 4,338,708
26 A 4,338,709
4,338,710
251 4,338,711
281.6 4,338,712
420.5 4,338,713
433 4,338,714
451 4,338,715
456 4,338,716
839 4,338,717

CLASS 30

171 4,338,718
276 4,338,719
4,338,720
322 4,338,721

CLASS 33

174 G 4,338,724
174 L 4,338,722
4,338,723
174 N 4,338,725
178 R 4,338,726
269 4,338,727
406 4,338,728

CLASS 34

1 4,338,729
54 4,338,730
82 4,338,731
135 4,338,732

CLASS 36

7.3 4,338,733
44 4,338,734
119 4,338,735

CLASS 37

142 A 4,338,736

CLASS 40

1.5 4,338,737
509 4,338,738
584 4,338,739

CLASS 42

1 SR 4,338,740

CLASS 44

51 4,339,246
63 4,339,245

CLASS 46

14 4,338,741
227 4,338,742

CLASS 47

1.3 4,338,743
4,338,744
58 4,338,745
4,338,746

CLASS 49

349 4,338,747

CLASS 51

206 R 4,338,748
220 4,338,749
281 R 4,338,750

CLASS 52

187 4,338,751
194 4,338,752
309.13 4,338,753
393 4,338,754
484 4,338,755
539 4,338,756
699 4,338,757
742 4,338,758
743 4,338,759

CLASS 53

48 4,338,760
137 4,338,761
244 4,338,762
399 4,338,763
432 4,338,764
452 4,338,765
456 4,338,766
492 4,338,767
495 4,338,768
509 4,338,769

CLASS 55

15 4,339,247
89 4,339,248
269 4,339,249
316 4,339,250
378 4,339,251

CLASS 56

33 4,338,770
294 4,338,771

CLASS 57

9 4,338,772
58.86 4,338,774
81 4,338,773
119 4,338,775
246 4,338,776
263 4,338,777
276 4,338,778

CLASS 59

25 4,338,779

CLASS 60

39.05 4,338,780
39.35 4,338,781
39.46 S 4,338,782
225 4,338,783
274 4,338,784
311 4,338,785
384 Re.30,992
531 4,338,786
562 4,338,787
648 4,338,788
652 4,338,789

CLASS 62

35 4,339,252
40 4,339,253
80 4,338,790
160 4,338,791
256 4,338,792
292 4,338,793
348 4,338,794
372 4,338,795

CLASS 65

27 4,339,254
32 4,339,255
4,339,256
60.5 4,339,257
79 4,339,258
104 4,339,259
160 4,339,260
178 4,339,261
182.1 4,339,262
225 4,339,263
239 4,339,264

CLASS 66

125 R 4,338,799
194 4,338,800

CLASS 68

13 R 4,338,801
18 FA 4,338,802

CLASS 69

16 4,338,803

CLASS 70

134 4,338,804
4,338,805
417 4,338,806

CLASS 71

9 4,339,265
92 4,339,266
4,339,267
108 4,339,268

CLASS 72

187 4,338,807
379 4,338,808

CLASS 73

1 E 4,338,810
1 H 4,338,809
23.1 4,338,811
40.5 R 4,338,812
116 4,338,813
118 4,338,814
4,338,815
119 A 4,338,816
448 4,338,817
462 4,338,818
497 4,338,819
597 4,338,820
603 4,338,821
643 4,338,822
654 4,338,823
828 4,338,824
862.65 4,338,825
863.52 4,338,841
4,338,842
864.62 4,338,826

CLASS 74

475 4,338,828
545 4,338,827
594.4 4,338,829
764 4,338,830
805 4,338,831
866 4,338,832

CLASS 75

5 4,339,269
223 4,339,271
240 4,339,272

CLASS 76

103 4,338,833

CLASS 81

106 4,338,834
436 4,338,835

CLASS 83

94 4,338,836
319 4,338,837
467 R 4,338,838
620 4,338,839
622 4,338,840

CLASS 84

1.01 4,338,843
4,338,844
1.1 4,338,845
1.24 4,338,846
20 4,338,847
253 4,338,848
345 4,338,849
411 M 4,338,850

CLASS 89

33 BB 4,338,851
37 E 4,338,852
41 R 4,338,853

CLASS 91

369 A 4,338,854
378 4,338,855
420 4,338,856

CLASS 92

62 4,338,857
222 4,338,858

CLASS 98

105 4,338,859

CLASS 101

126 4,338,860

CLASS 102

261 4,338,861
516 4,338,862

CLASS 104

89 4,338,863
121 4,338,864

CLASS 105

202 4,338,865

CLASS 106

35 4,339,279
90 4,339,273
106 4,339,274
271 4,339,276
275 4,339,277
308 Q 4,339,278

CLASS 108

111 4,338,866
159 4,338,867

CLASS 110

246 4,338,868
346 4,338,869
4,338,870

CLASS 111

10 4,338,871
56 4,338,872

CLASS 112

262.1 4,338,873

CLASS 114

50 4,338,874
221 R 4,338,875

CLASS 118

259 4,338,876
421 4,338,877
429 4,338,878
602 4,338,879
652 4,338,880
673 4,338,881
674 4,338,882
719 4,338,883

CLASS 119

72.5 4,338,884
96 4,338,885
106 4,338,886

CLASS 122

4 D 4,338,887
16 4,338,888

CLASS 123

41.31 4,338,891
54 A 4,338,892
90.16 4,338,893
90.58 4,338,894
146.5 A 4,338,895
195 A 4,338,890
198 D 4,338,896
198 E 4,338,889
267 4,338,897
279 4,338,898
339 4,338,899
440 4,338,900
4,338,901
454 4,338,902
476 4,338,903
499 4,338,904
525 4,338,905
545 4,338,906
557 4,338,907
572 4,338,908

CLASS 124

16 4,338,909
24 R 4,338,910

CLASS 126

21 A 4,338,911
25 A 4,338,912
77 4,338,913
143 4,338,914
163 A 4,338,915
298 4,338,916
429 4,338,917
430 4,338,918
435 4,338,919
443 4,338,920
446 4,338,921
452 4,338,922

CLASS 127

56 4,339,280

CLASS 128

24 R 4,338,923
28 4,338,924
92 A 4,338,927
92 BC 4,338,926
92 E 4,338,925
136 4,338,928
152 4,338,929
200.26 4,338,930
203.15 4,338,931
214 E 4,338,932
214 R 4,338,933
214.4 4,338,934
218 R 4,338,935
266 4,338,936
283 4,338,937
284 4,338,938
286 4,338,939
303.14 4,338,940
325 4,338,941
344 4,338,942
4,338,943
400 4,338,944
421 4,338,945
481 4,338,946
642 4,338,947
660 4,338,948
677 4,338,949
687 4,338,950
695 4,338,951
757 4,338,952
774 4,338,953

CLASS 130

27 AB 4,338,955
27 G 4,338,954

CLASS 131

336 4,338,956

CLASS 132

91 4,338,957

CLASS 134

1 4,339,281
3 4,339,282
12 4,339,283
104 4,338,958

CLASS 136

248 4,339,626
259 4,339,627

CLASS 137

93 4,338,959
240 4,338,960
243.2 4,338,961
269 4,338,962
375 4,338,963
436 4,338,964
554 4,338,965
596.17 4,338,966
601 4,338,967

CLASS 138

30 4,338,968
44 4,338,969
141 4,338,970

CLASS 139

194 4,338,971
369 4,338,972
439 4,338,973
449 4,338,974
450 4,338,975

CLASS 140

12 4,338,976
70 4,338,977

CLASS 141

1.1 4,338,978
10 4,338,979
18 4,338,980
85 4,338,981
132 4,338,982
331 4,338,983
4,338,984

CLASS 144

34 R 4,338,985
39 4,338,986
285 4,338,987

CLASS 148

1.5 4,339,285
12 C 4,339,284
24 4,339,286
111 4,339,287
403 4,339,270

CLASS 149

8 4,339,288

CLASS 152

216 4,338,988
354 RB 4,338,989

CLASS 156

91 4,339,289
159 4,339,290
195 4,339,291
206 4,339,292
227 4,339,293
252 4,339,294
275.7 4,339,295
345 4,339,296
4,339,297
498 4,339,298
563 4,339,299
601 4,339,300
603 4,339,301
605 4,339,302
629 4,339,303
635 4,339,304
650 4,339,305

CLASS 159

15 4,339,306

CLASS 160

229 R 4,338,990

CLASS 165

2 4,338,991
9 4,338,992
44 4,338,993
49 4,338,994
4,338,995
57 4,338,996
134 R 4,338,997
165 4,338,998

CLASS 166

117 4,338,999
295 4,339,000
322 4,339,001
355 4,339,002

CLASS 172

47 4,339,003
537 4,339,004

CLASS 174

35 R 4,339,628
50 4,339,629
152 R 4,339,630

CLASS 175

9 4,339,005
57 4,339,006
107 4,339,007
272 4,339,008
374 4,339,009

CLASS 177

134 4,339,010
177 4,339,011
262 4,339,012

CLASS 179

1 GS 4,339,631
90 B 4,339,632
99 M 4,339,633

CLASS 180

6.5 4,339,013
54 A 4,339,014
65 R 4,339,015
89.17 4,339,016
127 4,339,017

CLASS 181

286 4,339,018

CLASS 182

47 4,339,019
214 4,339,020

CLASS 191

50 4,339,021

CLASS 192

14 4,339,022
70.25 4,339,023

CLASS 193

34 4,339,024

CLASS 198

347 4,339,025
4,339,026
383 4,339,027
427 4,339,028
750 4,339,029
779 4,339,030
864 4,339,031

CLASS 200

5 A 4,339,634
48 A 4,339,636
48 R 4,339,635
51.09 4,339,637
52 R 4,339,638
4,339,639
61.45 R 4,339,640
148 R 4,339,641
153 G 4,339,642
159 A 4,339,643
266 4,339,644

CLASS 202

176 4,339,307
263 4,339,308

CLASS 203

29 4,339,309

CLASS 204

38 R 4,339,310
47 4,339,311
95 4,339,312
98 4,339,313
4,339,314
129.85 4,339,315
195 B 4,339,317
195 S 4,339,318
4,339,320
224 R 4,339,319
237 4,339,321
243 R 4,339,316
255 4,339,322
256 4,339,323
270 4,339,324
296 4,339,325
298 4,339,326
299 R 4,339,327

CLASS 206

158 4,339,032
216 4,339,033
313 4,339,034
370 4,339,035
423 4,339,036
444 4,339,037
455 4,339,038
523 4,339,039
599 4,339,040
611 4,339,041

CLASS 208

8 LE 4,339,328
10 4,339,329
251 R 4,339,330

CLASS 209

5 4,339,042
44 4,339,043
167 4,339,331
564 4,339,044

CLASS 210

198.1 4,339,332
411 4,339,333
433.2 4,339,334

CLASS 211

13 4,339,045

CLASS 215

11 B 4,339,046

CLASS 219

10.49 R 4,339,645
10.55 B 4,339,646
4,339,649
10.55 M 4,339,648
10.55 R 4,339,647
69 G 4,339,650
85 CM 4,339,651
95 4,339,652
99 4,339,653
107 4,339,654
121 LJ 4,339,655
494 4,339,656

CLASS 220

1.5 4,339,047
18 4,339,048
23.4 4,339,049
66 4,339,051
226 4,339,052
269 4,339,053
295 4,339,054
4,339,055
375 4,339,056
437 4,339,050

CLASS 221

213 4,339,057

CLASS 222

309 4,339,058

CLASS 223

46 4,339,059

CLASS 224

32 R 4,339,060
42.42 4,339,061
148 4,339,062
273 4,339,063
324 4,339,064

CLASS 227

8 4,339,065

CLASS 228

183 4,339,066

CLASS 229

22 4,339,067
33 4,339,068
36 4,339,069
52 B 4,339,070

CLASS 232

5 4,339,071

CLASS 233

7 4,339,072

CLASS 235

92 QC 4,339,657

CLASS 236

46 R 4,339,073
47 4,339,074
59 4,339,075
84 4,339,076

CLASS 238

349 4,339,077

CLASS 239

1 4,339,078
43 4,339,079
341 Re.30,993
533.3 4,339,080
552 4,339,081
585 4,339,082

CLASS 241

37 4,339,083
4,339,084
62 4,339,085
121 4,339,086
211 4,339,087

CLASS 242

1 4,339,088
18 A 4,339,089
35.5 A 4,339,090
47 4,339,091
56 R 4,339,092
58.6 4,339,093
68.2 4,339,094
84.21 R 4,339,095
86.5 R 4,339,096

CLASS 244

3.16 4,339,097
151 B 4,339,098

CLASS 248

101 4,339,099
123.1 4,339,100
178 4,339,101
221.1 4,339,102
397 4,339,103
407 4,339,104
500 4,339,105

CLASS 249

219 R 4,339,106

CLASS 250

213 VT 4,339,659
221 4,339,660
227 4,339,658
4,339,661
229 4,339,662
270 4,339,663
490 4,339,825
577 4,339,664
578 4,339,665

CLASS 251

1 B 4,339,107
58 4,339,108
129 4,339,109
309 4,339,110
331 4,339,111
367 4,339,112

CLASS 252

8.8 4,339,335
34 4,339,336
62.54 4,339,337
70 4,339,338
75 4,339,339
79.5 4,339,340
174.11 4,339,341
174.25 4,339,342
182 4,339,343
187.24 4,339,344
309 4,339,345
311.5 4,339,346
344 4,339,347
364 4,339,348
389 A 4,339,349
429 B 4,339,351
429 R 4,339,350
449 4,339,352
455 Z 4,339,353
4,339,354
464 4,339,355
522 A 4,339,356
606 4,339,357

CLASS 254

13 4,339,113

CLASS 256

12.5 4,339,114

CLASS 260

99.5 4,339,377
112.5 R 4,339,378
4,339,379
207.1 4,339,380
239.3 B 4,339,381
397.45 4,339,390
401 4,339,391
429 R 4,339,392
459 A 4,339,393
465.3 4,339,394
465.8 R 4,339,395
543 R 4,339,396
665 R 4,339,397

CLASS 261

89 4,339,398
112 4,339,399

CLASS 264

1.9 4,339,400
11 4,339,401
40.1 4,339,402
4,339,403
4,339,404
108 4,339,405
154 4,339,406
229 4,339,407
328.7 4,339,408
509 4,339,409

CLASS 266

280 4,339,115

CLASS 269

132 4,339,116
289 MR 4,339,117

CLASS 270

31 4,339,118

CLASS 271

180 4,339,119

CLASS 272

8 R 4,339,120
38 4,339,121
56.5 R 4,339,122
65 4,339,123
94 4,339,124
118 4,339,125
127 4,339,126
4,339,127

CLASS 273

54 D 4,339,128
54 R 4,339,129
73 A 4,339,131
73 R 4,339,130
126 R 4,339,133
138 A 4,339,134
237 4,339,135
242 4,339,136
331 4,339,137
400 4,339,132
428 4,339,138

CLASS 280

43.23 4,339,139
433 4,339,140
652 4,339,141
759 4,339,142

CLASS 282

27.5 4,339,143

CLASS 290

44 4,339,666

CLASS 293

120 4,339,144

CLASS 296

1 S 4,339,145
19 4,339,146
24 C 4,339,147
35.3 4,339,148

CLASS 297

250 4,339,149
284 4,339,150
464 4,339,151

CLASS 299

5 4,339,152
59 4,339,153

CLASS 303

3 4,339,154
38 4,339,155

CLASS 305

22 4,339,156

CLASS 307

10 LS 4,339,667
149 4,339,668
228 4,339,669
252 A 4,339,670
253 4,339,671
270 4,339,672
4,339,673
362 4,339,674
473 4,339,675
4,339,676
564 4,339,677

CLASS 308

6 C 4,339,157
20 4,339,158
4,339,159
36.3 4,339,160
187.1 4,339,161

CLASS 310

10 4,339,678
49 R 4,339,679
62 4,339,680
201 4,339,681
321 4,339,682
364 4,339,683

CLASS 312

1 4,339,163
10 4,339,162
283 4,339,164

CLASS 313

105 R 4,339,684
113 4,339,685
221 4,339,686
402 4,339,687
403 4,339,688
499 4,339,689

CLASS 315

97 4,339,690
111.21 4,339,691
225 4,339,693
276 4,339,695
277 4,339,692
360 4,339,696
366 4,339,694

CLASS 318

341 4,339,697
444 4,339,698
561 4,339,699
660 4,339,700
696 4,339,701
4,339,702
702 4,339,703

CLASS 322

90 4,339,704

CLASS 323

210 4,339,705
248 4,339,706
313 4,339,707

CLASS 324

54 4,339,708
61 R 4,339,709
73 R 4,339,710
77 E 4,339,711
102 4,339,712
173 4,339,713
207 4,339,714
252 4,339,715
309 4,339,716
313 4,339,717
319 4,339,718
362 4,339,720
446 4,339,719
457 4,339,721

CLASS 328

38 4,339,722
111 4,339,723
164 4,339,724

CLASS 329

50 4,339,725
103 4,339,726
106 4,339,727

CLASS 330

254 4,339,728
294 4,339,729
297 4,339,730

CLASS 331

1 A 4,339,731
109 4,339,732

CLASS 333

237 4,339,733

CLASS 335

78 4,339,734
119 4,339,735
213 4,339,736
272 4,339,737

CLASS 336

136 4,339,739

CLASS 337

39 4,339,740
124 4,339,741
279 4,339,742
354 4,339,738

CLASS 338

206 4,339,743

CLASS 339

41 4,339,165
100 4,339,166
272 A 4,339,167

CLASS 340

133 4,339,744
146.3 F 4,339,745
518 4,339,746
547 4,339,747
555 4,339,748
680 4,339,749
870.37 4,339,750

CLASS 343

5 CM 4,339,752
5 DP 4,339,751
6.5 SS 4,339,753
7.7 4,339,754
112 D 4,339,755
702 4,339,756
781 P 4,339,757

CLASS 346

1.1 4,339,758
33 R 4,339,759
74.5 4,339,760
75 4,339,761
140 R 4,339,762
4,339,763

CLASS 350

3.69 4,339,168
61 4,339,169
96.16 4,339,170
96.20 4,339,171
96.21 4,339,172
96.30 4,339,173
96.31 4,339,174
125 4,339,175
162 SF 4,339,176
431 4,339,177
432 4,339,178

CLASS 351

153 4,339,179

CLASS 352

92 4,339,180

CLASS 353

27 R 4,339,181
4,339,182
78 4,339,183

CLASS 354

23 D 4,339,184
31 4,339,185
38 4,339,186
173 4,339,187
4,339,189
219 4,339,188
234 4,339,190
269 4,339,191
4,339,192
288 4,339,193

CLASS 355

3 CH 4,339,195
3 DD 4,339,196
3 FU 4,339,194
58 4,339,197

CLASS 356

144 4,339,198
213 4,339,199
241 4,339,200
312 4,339,201

CLASS 357

30 4,339,764
36 4,339,765
41 4,339,766
44 4,339,767
72 4,339,768

CLASS 358

6 4,339,769
19 4,339,770
41 4,339,771
144 4,339,772
184 4,339,773
283 4,339,774

CLASS 360

10 4,339,775
69 4,339,776
97 4,339,777
99 4,339,778

CLASS 361

33 4,339,779
147 4,339,780
154 4,339,781
229 4,339,782
235 4,339,783
403 4,339,784
411 4,339,785
433 4,339,786

CLASS 362

121 4,339,787
157 4,339,788
259 4,339,789
267 4,339,790

CLASS 363

41 4,339,791
75 4,339,792

CLASS 364

200 4,339,793
4,339,794
4,339,795
4,339,796
4,339,797
412 4,339,798
414 4,339,799
417 4,339,800

431.04 4,339,801
483 4,339,802
724 4,339,803
900 4,339,804
4,339,805
4,339,806
4,339,807
4,339,808

CLASS 365

206 4,339,809

CLASS 366

8 4,339,202
9 4,339,203
18 4,339,204
296 4,339,205
307 4,339,206

CLASS 367

49 4,339,810
96 4,339,811

CLASS 369

170 4,339,812
231 4,339,813
261 4,339,814

CLASS 370

58 4,339,815
71 4,339,816
93 4,339,817
112 4,339,818

CLASS 371

16 4,339,819
53 4,339,820

CLASS 372

18 4,339,821
26 4,339,822

CLASS 373

52 4,339,624
158 4,339,625

CLASS 374

160 4,339,207

CLASS 375

20 4,339,823
110 4,339,824

CLASS 376

216 4,339,410
272 4,339,411

CLASS 400

124 4,339,208
142 4,339,209
208 4,339,210
248 4,339,211

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4,339,024
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56 : 4,339,114
4,339,406

DESIGN PATENTS

01 : 265,422
04 : 265,372
265,405
06 : 265,359
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08 : 265,421
09 : 265,408
12 : 265,356
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13 : 265,351
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265,429
17 : 265,381
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18 : 265,378
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19 : 265,353
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24 : 265,380
26 : 265,393

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34 : 265,352
265,401
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36 : 265,363
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265,430
37 : 265,355
265,362
265,434
39 : 265,364
265,397

265,410
265,420
40 : 265,374
41 : 265,358
265,415
48 : 265,404
265,424
265,433
49 : 265,419
55 : 265,375
265,409

PLANT PATENTS

06 : 4,865
4,866

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